AMERICAN AGRICULTURIST

FOR THE

Farm, Garden, and Household.

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

ORANGE JUDD COMPANY, PUBLISHERS AND PROPRIETORS. Office, 245 BROADWAY.

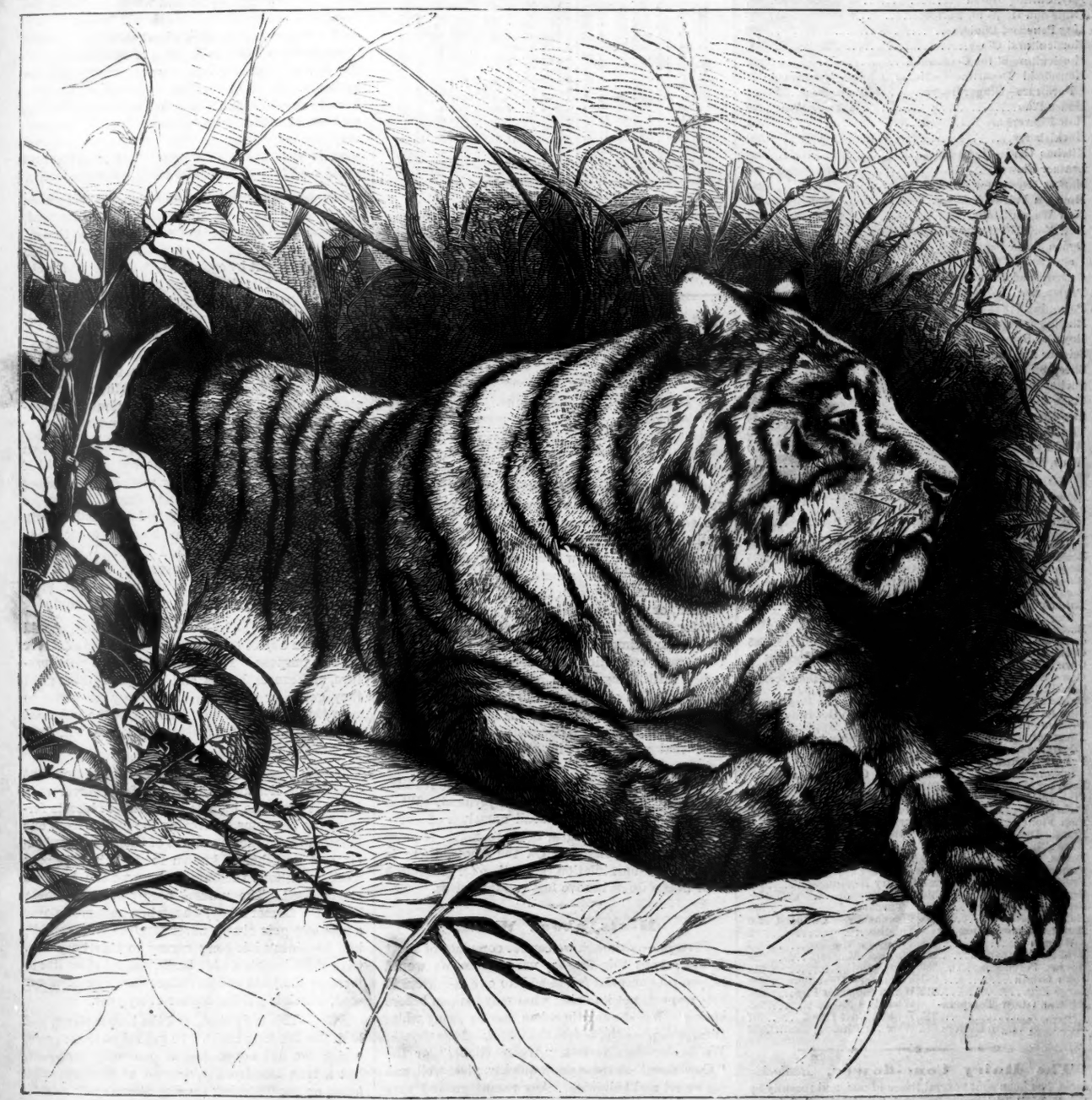
ESTABLISHED IN 1842.

Published also in German at same rates as in English.

TERMS: $1.50 PER ANNUM IN ADVANCE; 4 Copies for $5; 10 for $12; 20 or more, $1 each; 10 Cents additional must be sent with each Subscription for postage.—Single Number, 15 Cents.

Entered according to Act of Congress, in July, 1876, by the ORANGE JUDD COMPANY, at the Office of the Librarian of Congress, at Washington.

VOLUME XXXV.—No. 8. NEW YORK, AUGUST, 1876. NEW SERIES—No. 355.



THE ROYAL OR BENGAL TIGER.— *Engraved for the American Agriculturist.*

According to our custom of occasionally giving engravings merely as pictures, we this month present the above. When we first came across this picture in the British Workman, it struck us as not only the best representation of a tiger we had seen, but one of the best animal portraits we had ever met with. The drawing, by an artist named Brittain, is masterly, as representing the savage dignity of the beast, and conveying the idea of concealed power and ferocity. Though not so large as the lion, the tiger is a more beautiful as well as a more powerful animal; its ground color is orange-yellow, except the white on its face, throat, and under parts, marked with elegant black bands. Its strength is enormous, a man being as nothing in its grasp.

Contents for August, 1876.

Agriculture at the Centennial....288
Among the Farmers—No. 7....293
Bee Notes for August....289
Boys and Girls' Columns—John Gilpin's Ride—Aunt Sue's Puzzle Box—Aunt Sue's Chats—How Kitty Went Blackberrying—Doctor's Talks—Maccaroni Eaters....6 *Illustrations*..305-308
Cellars, Dry....2 *Illustrations*..296
Cheap Production....299
Chickens, Artificial Mother for....4 *Illustrations*..295
Corn, Unloading....2 *Illustrations*..297
Farmers and Middlemen....299
Filter for Cisterns....4 *Illustrations*..296
Flax Manufacture in America....298
Flower Garden and Lawn for August....283
Fruit Garden for August....283
Greenhouse and Window Plants for August....284
Hay, Cutting Marsh....2 *Illustrations*..297
Hints and Helps for Farmers....6 *Illustrations*..298
Hog Pens and Cholera....298
Horticultural Clogs....*Illustrated*..303
Horticulture at the Centennial....288
Household Department—Home Topics—Home-made Furniture—Ginger Snaps....3 *Illustrations*..303-305
House Plan....4 *Illustrations*..292
How Flowers are Fertilized....303
Huckleberry....302
Kitchen Garden for August....283
Leather Flower....*Illustrated*..300
Market Report for August....284
Moose, a Pair of Young....*Illustrated*..293
New Wagon Brake....2 *Illustrations*..291
New York Horticultural Association....314
Ogden Farm Papers, No. 78.—Deep-Can System—Jersey Cattle Club....289-290
Orchard and Nursery for August....283
Pentstemon, Large-Flowered....*Illustrated*..300
Poisoning Potato Bugs....*Illustrated*..288
Rhododendrons in America....301
Royal or Bengal Tiger....*Illustrated*..281
Science Applied to Farming....290
Sheep-Shearing Machine....3 *Illustrations*..299
Shelter for the Head....*Illustrated*..289
Stalls for an Octagon Barn....2 *Illustrations*..297
Strawberries....289
Tim Bunker on Hard Times....295
Wool Prospects....299
Work, Hints About....282

INDEX TO "BASKET," OR SHORTER ARTICLES.

American Institute....285
Amsden Peach....286
Annattoine....288
A Short History of Natural Science....288
Berkshire Swine Record..286
Blight and Electricity....285
Bloody Milk....285
Botany of California....286
Bullocks, Weight of Yearling....285
Business Pluck....288
Concrete Houses....285, 286
Corn or Wheat for Poultry315
Corn Stubble, To Manage285
Cows, Swiss....315
Crib-Biting....285
Crude Petroleum....285
Cure for Spavin....314
Disease of the Mouth....285
Effect of Breeding and Feeding on the Skin..313
Failure to Grow Potatoes in Colorado....315
Feed for Wool, Best....315
Fine Lilies....286
Firing Horses....288
Fish Flour....314
Floral Decorations for Dwellings....315
Fowls, Broken Legs in..315
Franklin Institute of Pa..287
Fruit Preserving Powder286
Goats versus Rats....315
Guessing at a Plant....285
Hairy Cone-flower....282
Harvard Examination for Women....286
Heat for Incubation....285
Horses, Percheron....287
John Gilpin....287
Large Egg....313
Milk and Low Temperature....315
Milk from Virgin Heifers.314
Mohair, Market for....286
Mowers at Philadelphia..285
Mowers in Switzerland, Trial of....285
Mowing Machine, Cost of286
New Plants, Introducing.285
Oaks of the U. S....287
Patrons of Husbandry at the Centennial....287
Peruvian Guano....287
Pigs, Importation of....314
Plum Sprouts upon a Willow....285
Poetry, Centennial Editions of....286
Riflemen, Hand-Book for.286
Right and Left Again....315
Root Cellars and Pits....285
Sassafras, to Get Rid of..285
Science and Appletons..286
Sheep-Raising in the West....315
Sale of Horses....286
Some Questions about Hogs....315
Sow Fails to Breed....287
Steep for Seed Wheat....315
Strawberry, Duncan....313
Suffolk or Small Yorkshire....315
Sugar and Sorgho Machinery....286
Sundry Humbugs....286
Swelling on a Colt's Throat....313
Thomas' Fruit Culturist..286
Thistles....286
Tumor on the Eye....315
Turkeys, Raising....288
Turnip Soil....313
Veterinary Obstetrics...313
Warm Slops for Pigs....315
What is a Month?....315
Wheat, Rust-Proof....287
Wire for Binding Grain..314

The Hairy Cone-flower, *Rudbeckia hirta*, has been sent several times of late, and recently by "J. S. W.," Dillsburg, Pa., and "O. W. W.," Orleans, N. Y., for a name. It is a branching plant, one to two feet high, roughly hairy, and bearing heads of flowers, one to two inches across, that appear like small sunflowers, with a very dark purple center. This is properly a western plant, which is becoming common at the East, its seeds having been brought in baled hay, and in field seeds, and is now frequent in pastures and meadows.

Calendar for August.

Day of Month.	Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Mo'n sets.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Mo'n sets.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Mo'n sets.
		H. M	H. M	H. M.	H. M	H. M	H. M.	H. M	H. M	H. M.
1	T	4 55	7 20	1 0	4 56	7 16	1 8	5 0	7 12	1 15
2	W	4 55	7 19	1 55	4 57	7 15	2 0	5 1	7 11	2 9
3	T	4 54	7 18	2 55	4 58	7 14	3 1	5 1	7 10	3 8
4	F	4 55	7 16	4 1	4 59	7 13	4 7	5 2	7 9	4 12
5	S	4 56	7 15	rises	5 0	7 11	rises	5 3	7 8	rises
6	S	4 57	7 14	8 2	5 1	7 10	8 0	5 4	7 7	7 57
7	M	4 58	7 13	8 23	5 2	7 9	8 22	5 5	7 6	8 21
8	T	4 59	7 11	8 41	5 3	7 7	8 41	5 6	7 4	8 41
9	W	5 0	7 10	9 1	5 4	7 6	9 2	5 7	7 3	9 4
10	T	5 1	7 9	9 24	5 5	7 5	9 26	5 8	7 2	9 29
11	F	5 2	7 8	9 50	5 6	7 4	9 54	5 9	7 0	9 58
12	S	5 3	7 7	10 24	5 7	7 3	10 29	5 10	6 59	10 35
13	S	5 4	7 5	11 6	5 8	7 1	11 13	5 11	6 58	11 20
14	M	5 5	7 4	11 55	5 9	7 0	morn	5 12	6 57	morn
15	T	5 6	7 2	morn	5 10	6 58	0 7	5 13	6 55	0 14
16	W	5 7	7 0	1 8	5 11	6 56	1 15	5 14	6 53	1 22
17	T	5 8	6 59	2 29	5 12	6 55	2 35	5 15	6 52	2 42
18	F	5 9	6 57	3 48	5 13	6 53	3 53	5 16	6 50	3 58
19	S	5 10	6 55	sets	5 14	6 52	sets	5 17	6 49	sets.
20	S	5 11	6 54	7 38	5 15	6 51	7 37	5 18	6 48	7 36
21	M	5 12	6 52	8 0	5 16	6 49	8 0	5 19	6 46	8 1
22	T	5 14	6 51	8 21	5 17	6 48	8 23	5 20	6 45	8 24
23	W	5 15	6 50	8 44	5 18	6 47	8 47	5 21	6 44	8 51
24	T	5 16	6 48	9 8	5 19	6 45	9 13	5 21	6 42	9 17
25	F	5 17	6 47	9 39	5 20	6 44	9 41	5 22	6 41	9 50
26	S	5 18	6 45	10 11	5 21	6 42	10 18	5 23	6 40	10 26
27	S	5 19	6 44	10 53	5 22	6 41	11 1	5 24	6 38	11 8
28	M	5 20	6 42	11 45	5 23	6 39	11 53	5 25	6 37	12 0
29	T	5 21	6 40	morn	5 24	6 38	morn	5 26	6 36	morn
30	W	5 22	6 39	0 53	5 25	6 36	0 54	5 27	6 34	0 57
31	T	5 23	6 37	1 50	5 26	6 35	1 56	5 28	6 33	2 2

PHASES OF THE MOON.

MOON.		BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
	D.	H. M.	H. M.	H. M.	H. M.	H. M.
Full M'n	5	1 51 mo.	1 42 mo.	1 30 mo	1 18 mo.	0 48 mo.
3d Quart.	12	5 15 ev.	5 3 ev.	4 51 ev.	4 39 ev.	4 9 ev.
New M'n	19	7 42 mo.	7 30 mo.	7 18 mo	7 6 mo.	6 36 mo.
1st Quart	26	1 31 ev.	1 22 ev.	1 10 ev.	0 58 ev.	0 28 ev.

AMERICAN AGRICULTURIST.

NEW YORK, AUGUST, 1876.

A farmer's work is never done. But there is a constant variety about it that prevents weariness, and some gratifying result is always perceptible for every labor. After the hurry of July comes a comparative rest; that is work *must* be done in harvest, but *may* be done in August, when the hurry of harvest is over. On the whole, we have had a favorable season, and cultivated crops that have been well worked are free from weeds, and are laid by in good condition. Now that a few days can be spared, every farmer should visit the Centennial. There is much to be seen that will give every man, woman, or child old enough to appreciate it, matter for thought, study, or imitation, that will be worth many times the cost. No person can view this grand exhibition, and come out of it discontented with things as we now possess and enjoy them. And of all persons who are benefited by the labors of mind and muscle of the last 50 years, the farmer stands first. Thoughtfully viewed, it is seen that nearly every invention in the arts and sciences, have gone to help him to work better or more easily; to reach his customers more readily, and to add to his comforts and enjoyment. What we have to do now is to avail ourselves of every possible help in our farm work, to make it more effective and profitable. On the whole, there is reason for congratulation, rather than for grumbling that things do not move fast enough for us.

Hints about Work.

Turnips.—Although we cannot complain of short fodder crops this season, nevertheless we would not on that account fail to add to our resources in this respect, not knowing what may happen before spring. We should therefore sow as many white turnips as possible, before the middle of the month. We prefer the Norfolk "White Globe," or the "Cow-horn," as these grow quickly, yield well, and are sweet and palatable. Any vacant ground may be used, or a piece of grass land that has run out and needs reseeding, may be turned down evenly, so that the grass is covered, and thoroughly harrowed without tearing up the sod. A dressing of wood-ashes will be found very useful for this crop.

Winter Wheat.—This crop usually follows oats or barley. To summer-fallow for the wheat crop is now a plan to be discarded, excepting under very unusual circumstances. The oat or barley stubble should be plowed as soon as possible, lest it may become too dry to work well, or weeds may mature their seed. We do not advocate making the ground too mellow, and would have the surface somewhat cloddy if the soil is mellow underneath. We have frequently noticed that the wheat upon most carefully finished and rolled fields, has suffered most from "heaving" in the winter, and that the wheat that has been "cultivated" in, has stood as well or better than the drill sown. We give two plowings for our wheat, one shallow one as soon as possible after the oats or barley has been hauled off, to cover the trash and start the shed seed, and a final one in September.

Seed Wheat should be selected as soon as possible. The most readily shelled wheat is usually the ripest and plumpest, and this should be selected for seed. Otherwise the seed wheat should be passed through the fanning mill three or four times, that the heaviest, largest, and cleanest grains may be gathered. In every locality some one of the best farmers should make a special business of raising seed wheat, which readily brings double the ordinary market price, and well grown and selected seed is well worth this price. Above all things avoid seed foul with cockle, chess, or other weeds.

Manure.—Manure is much damaged at this season by exposure to the hot sun while spread in the yard, or by mixture with seeds of weeds from the thrashing machine, or from foul pastures, from which they are brought by cattle. Both these evils should be avoided. Pile the manure as made, in compact, flattened heaps, and keep it moist; watering if need be with a few barrels of water now and then. Cut all weeds out of the pastures, lest they may be cropped by cows or horses, and the seeds brought home to go upon the fields again in the manure. Much may be done this month in gathering materials for compost. Road dust is particularly valuable, and may be gathered now in abundance.

Weeds in pastures, fence corners, road-sides, corn or potato fields, should be collected *and burned* if in blossom or seed. No other manner of disposing of them is safe, but this ends them. Remember that oats or barley from scattered seed in the newly sown wheat, are weeds as much as any other plant, and should not be permitted there. Where ragweed has been allowed to cover the stubble, it will pay to mow it and rake it off, rather than plow down the ripened seed, and stock the ground.

Clover Seed.—The high price of clover seed should make it an object to save the second crop of clover for this purpose. The aftermath is but poor pasture, and causes horses and colts to slobber until they get poor upon it. It will pay far better to save the second growth for seed, to be cut next month. 100 lbs. of "plaster" per acre, will help the growth very much.

Bumble Bees.—It is one of the most important late discoveries, that the yield of red clover seed depends upon the bumble bees. These insects fertilize the blossoms, conveying the pollen from one blossom to another by means of their long proboscis, and no other is known to do this necessary work. Without the bumble bees we can have no clover seed. The natural enemy of the bumble bee is the farmer's boy, who, when he tumbles over a nest and gets stung, never forgives or forgets it, but becomes a life long enemy to this busy bee. Give these insects a wide berth, and let them live to increase the yield and to reduce the price of clover seed, which is getting higher every year.

Flies.—This is fly time, and the horses stamp and kick the live-long night. To get rid of these pests, which are not house flies as generally supposed, but a true bloodsucker, known as *Stomoxys calcitrans*, or the "kicking causing Stomoxys," mix 20 parts of lard or glycerine, with one part of carbolic acid, and rub it lightly *upon the hair*—and not upon the skin—of the legs of horses and cows. Cleaning and washing the stables, and covering the opened windows with mosquito net, will help to secure a good night's rest to the horses and milking cows.

Horses.—A perfectly clean-cool stable, is prefera-

ble to a bed in a bare pasture field, for a hard worked team. If, however, there is a good piece of pasture handy, and the stable is neither clean nor cool, the pasture is to be preferred. But horses need their usual feed before being turned out. They can not live and work without sleep, nor sleep if they must pick a bellyful from the fence corners at night. Horse's feet and legs should be washed every night. (See preceding remarks upon flies).

Cows.—The yield of milk will fall off now without some fresh succulent feed. The suckers from the corn field ; leaves from mangels, soft headed cabbages, or best of all, some especially provided corn-fodder, or oats and peas mixed, will be useful to keep up the supply of milk. Next month's butter is only second in quality to June butter, and to keep up the supply of milk is important, and easier to do than to restore it after it has fallen off.

Sheep.—For early lambs some of the most forward ewes may now be selected from the flock and kept with the ram, being all fed a pint of mixed bran and linseed or cotton seed cake meal per day, to hasten the breeding season. Thin ewes that have sucking lambs, should now be separated from the lambs by day, and the lambs weaned. Those ewes that have much milk should be closely watched, and their milk drawn if needed, to avoid swollen and inflamed udders. Sheep and lambs with filthy hind parts, should be closely clipped, lest they may become fly-blown. Now is the time to select a good thoroughbred young ram, for needed improvement of the flock. In choosing the breed it is well to study the prices of long and short wools. The Cotswold is the most promising and useful long wool sheep we have, and is now perfectly acclimated here, several of our native bred flocks being as good as any imported ones.

Water.—This is a dry month, and stock may easily suffer for want of water. Want of water is productive of much suffering, which results in disease and death. See that every animal is well supplied with pure water in abundance. Ponds, sloughs, and foul spring holes are not fit to supply stock water, and wells or cisterns only should be used. There are as many hogs die every year of disease resulting from want of pure water, as would pay for a well upon every western farm, and yet this loss is submitted to year after year. This is one reason why farming does not pay with some farmers.

Swine.—Pork is still high enough to leave a good profit to feeders. With the present promise of the corn crop, a reduction in the value of pork at some time seems inevitable. It will therefore be entirely safe to make the pork as cheaply as possible. This can be done by feeding well and marketing early. A bushel of corn fed in August or September, will make twice as much pork as a bushel fed in November and December. To provide dry, clean feeding pens, will also lessen the cost of the pork, because it will encourage the growth of the swine.

Root Crops need to be thinned out and kept free from weeds. As soon as the leaves meet across the rows, the hoe may be laid aside. When thinning the crop, fill blank spaces by transplanting with a common garden trowel. This may be done at any time, without putting the plants back in the least.

Pastures.—Old worn pastures may be renewed by harrowing the mossy spots, or the places covered with sorrel, dressing them well with plaster, and sowing fresh grass seed. A light dressing of guano, superphosphate of lime, or nitrate of soda, will greatly help to restore a worn meadow, and bring in a fine growth of grass. The droppings of the cattle should be broken up and scattered occasionally upon both pastures and meadows that have been pastured. Pasturing meadows is not profitable, unless there is a heavy aftermath, and then cows will do less injury than horses or sheep.

Fattening Animals.—"An animal well summered is half wintered," so with animals to be fed for the butcher, every pound of flesh made now, will cost but a fourth, or less, of that made in the winter; besides the growth of an animal increases in proportion to its size, up to a certain limit, and the heavier it is made now, the greater its future increase. Therefore sheep, pigs, or beeves, should be pushed forwared now as rapidly as possible. Do not forget that water is food as well as solid matter, and should be given with as much regularity.

Work in the Horticultural Departments.

August generally affords the gardener a brief breathing spell in which a few days of leisure can be enjoyed. Make a visit to the mountains or seaside with the family, and return refreshed by the change of air and scene, and ready to resume the usual work with new vigor. During the dry season make preparations for laying drains where they are needed. Do up all little jobs now, and where brush and briars have been allowed to grow, cut and as soon as dry enough burn.

Orchard and Nursery.

The harvest of early apples, pears, and peaches, now demands attention, and the prices received will depend largely upon the manner of packing and assorting. If good, well colored fruit in convenient sized packages is received in good order, it will bring at any time more than enough extra price to pay for the extra care. Have all baskets, crates, and other needed packages, ready for use when wanted. The name of the grower should be placed on every package as a guarantee that the quality is as represented, and in a short time such packages will be sought after by buyers and dealers.

Drying.—Do not allow a surplus of any fruit to waste, preserve it by drying either in the sun or by fire heat. We have given in previous volumes various methods of drying which may be consulted.

Insects.—Examine the trees carefully to see that no late worms, caterpillars, or borers are at work. Borers should be probed out with a wire. In peach orchards as soon as the fruit is off, all hands are set at "worming," as this is called.

Budding will in many cases be performed during the present month. The proper time is when the bark of the stock lifts readily and well formed buds can be had. Directions for budding have been given in previous volumes, and with a little instruction and practice, any intelligent boy can learn to do it successfully.

Thinning.—It is not yet too late to thin out fruit where the branches are too heavily loaded. If not thinned, some will break down.

Seedlings will require shade if they are expected to endure the hot, dry weather of this month. See last month's notes.

Weeds can only be kept down by frequently stirring the soil ; if neglected, the labor is greatly increased. A horse with a cultivator or a harrow, can easily keep the weeds down in an orchard except immediately around the trees, where it will be necessary to use the hoe.

Seeds.—Gather tree seeds as they ripen, and store in earth or sand to keep from drying out.

Fruit Garden.

Blackberries will be just in their prime in the Northern States. If more are raised than can be used in the family, or sold, a supply should be dried or canned for winter. Never pick until fully ripe, as some varieties turn black long before they are fit to eat.

Dwarf Trees.—Pinch into shape and thin out the fruit when it is too thick.

Grapes.—If the canes have been properly tied up and pinched back, they will not require much attention now except a little pinching off of the laterals and the ends of the growing canes. If mildew makes its appearance, dust the vines with sulphur. Hand-pick caterpillars and other insects. If fine bunches are desired for exhibition, remove all imperfect berries and thin the others with a pair of sharp-pointed scissors. Young vines should be kept tied to stakes or trellises, and all surplus shoots removed.

Raspberries that have done bearing should have the old fruiting canes cut out and burned; leave but 3 or 4 of the new canes, which should be cut back at the hight of 4 or 5 feet, and the laterals to 18 inches.

Strawberries.—Set out new beds with runners that have been struck in pots, and keep the old beds clear of weeds. Where young plants are not needed, cut the runners as often as necessary.

Kitchen Garden.

By this month almost everything will be planted, and the chief work is to keep the growing crops free from weeds. This is so easily done that there is no excuse for a weedy garden. Keep the horse and cultivator in frequent use among the larger growing crops, and the hoe and various hand-weeders among the others. Save seeds as fast as they ripen, selecting only the best and earliest for seed.

Asparagus.—All that can be done to this crop is to pull out the larger weeds that appear.

Beans.—Plant a few rows for late use and for salting down for winter. Limas need pinching when they reach the top of the poles. If the crop is larger than can be used, shell and dry for winter.

Beets.—Thin and keep the weeds down and loosen the soil with the hoe or hand cultivator.

Cabbages.—No crop better repays good cultivation ; hoe often.

Carrots.—Thin and weed the late sowings.

Corn.—Save the earliest and best ears for seed. Cultivate and hoe as often as necessary.

Cucumbers for pickles need to be gathered every day, and salted down or sold. For the market assort them into three sizes, rejecting all over 3 or 4 inches long. Save seeds from the earliest.

Egg Plants.—Cultivate often, and go over daily and destroy the potato beetle. Place a shingle or handful of hay under the fruits, to keep them from the ground.

Herbs.—Cut as soon as in flower, tie in small bunches, and hang where they will dry.

Melons.—Pinch back the ends of rampant vines, and remove all fruit not likely to ripen. Those about ripening will be better if turned occasionally.

Onions.—Harvest as soon as the tops fall over; store in thin layers in a dry airy loft. If they can be marketed at paying prices now, it will be better than storing.

Peas.—Clear up the ground occupied by late peas, and plant with flat turnips.

Potatoes.—Dig as wanted, and either bury the tops in the rows, or take to the pig pen to be made into manure.

Squashes.—Treat the same as melons, and hand-pick the squash-bug. When the leaves wilt, look for the borer, and cut it out with a sharp knife.

Sweet Potatoes.—Do not allow the vines to root at the joints, but move every week, and keep the weeds out.

Tomatoes.—Keep tied to the trellises, and thin out surplus shoots. Destroy the large green worm.

Turnips.—Sow flat sorts in vacant spots, and thin out ruta-bagas.

Flower Garden and Lawn.

The dry weather of early summer has in many places told severely on lawns, and in many the grass has turned a sickly yellow. It is better not to cut the grass in such places, but leave it to protect the roots.

Dahlias, and other tall-growing plants will require stakes, as sudden wind and heavy rain storms will greatly injure the plants.

Layers of shrubs may be made for increasing the stock of such as do not readily root from cuttings.

Seeds.—Save the seeds of any desirable kinds. Many perennials only succeed when sown as soon as ripe, or at least after the intense heats are over.

Bedding Plants.—Keep these in shape by pinching, and keep clear of weeds.

Potted Plants set on the lawn or piazza, should be watered whenever they need it, else they will soon lose their healthy appearance.

Greenhouse and Window Plants.

Now is the time to thoroughly cleanse the greenhouses from insects, to do any needed repairs, and build all additions. Labor and materials are now at their lowest, and one cannot choose a better time for building any horticultural structure. Supply a plenty of water and air for the plants remaining in-doors, and give shade of some sort, to protect the foliage from injury by the sun.

Commercial Matters—Market Prices.

CURRENT WHOLESALE PRICES.

	June 13.	July 13.
PRICE OF GOLD	112 1-3	111 7-8
FLOUR—Super to Extra State	$4 00 @ 5 60	$3 25 @ 5 30
Super to Extra Southern	4 10 @ 9 25	3 25 @ 8 75
Extra Western	5 00 @10 00	4 25 @ 9 50
Extra Genesee	5 65 @ 7 25	5 30 @ 6 75
Superfine Western	4 00 @ 4 50	3 60 @ 4 00
RYE FLOUR	3 50 @ 5 20	3 50 @ 5 15
CORN-MEAL	2 75 @ 3 45	2 60 @ 3 35
WHEAT—All kinds of White	1 20 @ 1 55	1 20 @ 1 45
All kinds of Red and Amber	1 10 @ 1 45	80 @ 1 28
CORN—Yellow	60 @ 64	55½@ 60
Mixed	54 @ 60	47 @ 57
White	60 @ 66	56 @ 62
OATS—Western	35 @ 48	30 @ 43
State	40 @ 49	37 @ 44
RYE	72 @ 95	72 @ 88
BARLEY	Nominal.	Nominal.
HAY—Bale, ₱ 100 lbs	70 @ 1 00	60 @ 1 00
STRAW, ₱ 100 lbs	60 @ 1 10	60 @ 1 15
COTTON—Middlings, ₱ lb	12 @ 12¼	11¾@ 11¾
HOPS—Crop of 1875, ₱ lb	10 @ 17	10 @ 17
FEATHERS—Live Geese, ₱ lb	30 @ 60	30 @ 60
SEED—Clover, ₱ lb	16 @ 16½	Nominal.
Timothy, ₱ bushel	2 75 @ 2 85	2 70 @ 2 90
Flax, ₱ bushel	1 50 @ 1 55	1 50 @ —
SUGAR—Refi'g & Grocery ₱ lb	6¾@ 9	7¾@ 9¼
MOLASSES, Cuba, ₱ gal	28 @ 37½	28 @ 38
New Orleans, new crop, ₱ gal	45 @ 60	45 @ 60
COFFEE—Rio(Gold)	14¾@ 17¾	15¼@ 18¼
TOBACCO, Kentucky, &c., ₱ lb	6 @ 25	6 @ 25
Seed Leaf, ₱ lb	5 @ 35	5 @ 35
WOOL—Domestic Fleece, ₱ lb	39 @ 46	38 @ 40
Domestic, pulled, ₱ lb	20 @ 38	16 @ 35
California, clip	12 @ 25	10 @ 25
TALLOW, ₱ lb	8¾@ 8¾	8¼@ 8¾
OIL-CAKE—₱ ton	40 00 @41 00	36 50 @39 50
PORK—Mess, ₱ barrel	19 50 @ —	— @20 00
Prime Mess, ₱ barrel	Nominal.	19 00 @19 50
BEEF—Plain mess	10 00 @11 00	10 00 @11 00
LARD, in trcs. & bbls, ₱ 100 lb	11 50 @11 65	11 00 @11 25
BUTTER—State, ₱ lb	20 @ 28	15 @ 24
Western, poor to fancy, ₱ lb	13 @ 26	12 @ 24
CHEESE	4 @ 11	4 @ 10¼
BEANS—₱ bushel	75 @ 1 45	40 @ 1 40
PEAS—Canada, in bond, ₱ bu	— @ —	— @ 99
EGGS—Fresh, ₱ dozen	11 @ 14½	14½@ 18
POULTRY—Fowls	11 @ 18	13 @ 18
Capons, ₱ lb	— @ —	— @ —
Turkeys—₱ lb	8 @ 16	13 @ 18
Geese, ₱ pair	1 00 @ 2 50	1 25 @ 2 50
Geese, ₱ lb	— @ —	— @ —
Ducks, ₱ pair	50 @ 1 12½	60 @ 1 12½
Ducks, ₱ lb	— @ —	— @ —
Roosters, ₱ lb	6 @ 7	8 @ 10
Chickens, spring, ₱ pair	50 @ 1 00	— @ —
Chickens, dry pick'd lb	25 @ 35	20 @ 33
PIGEONS, wild, ₱ dozen	50 @ 75	90 @ 1 37½
" tame, ₱ dozen	1 12½@ 2 00	1 50 @ 1 75
LETTUCE, ₱ bbl	— @ —	40 @ 75
CUCUMBERS, ₱ bbl	— @ —	1 50 @ 2 50
TURNIPS ₱ 100 bunches	2 50 @ 4 00	3 00 @ 5 00
BEETS, ₱ bbl	— @ —	1 00 @ 2 00
STRING BEANS, ₱ bag	75 @ 1 25	75 @ 1 75
CAULIFLOWER, ₱ bbl	— @ —	1 50 @ 6 00
CABBAGES—₱ 100	— @ —	5 00 @ 6 00
" ₱ bbl	1 00 @ 1 50	— @ —
ONIONS—₱ bbl	— @ —	— @ —
" ₱ crate	1 00 @ 1 25	— @ —
POTATOES—New ₱ bbl	2 00 @ 7 00	2 00 @ 4 50
SWEET POTATOES—₱ bbl	— @ —	— @ —
BROOM-CORN	3 @ 10	3 @ 10
WATERMELONS, ₱ 100	— @ —	25 00 @50 00
GREEN PEAS, ₱ bag	— @ —	50 @ 1 00
TOMATOES, ₱ crate	75 @ 80	60 @ 75
RHUBARB, ₱ 100 bunches	1 00 @ 2 00	1 00 @ 2 00
RADISHES, ₱ 100 bunches	50 @ —	— @ —
APPLES—₱ barrel	1 50 @ 3 75	1 50 @ 3 50
SQUASH, ₱ bbl	— @ —	1 25 @ 1 50
ORANGES, Florida, ₱ bbl	— @ —	— @ —
GOOSEBERRIES, ₱ bush	— @ —	1 00 @ 1 50
CURRANTS, ₱ lb	— @ —	— @ 3
CHERRIES, ₱ lb	— @ —	5 @ 10
STRAWBERRIES, ₱ quart	5 @ 10	— @ —
BLACKBERRIES, ₱ qt	— @ —	3 @ 15
BARBERRIES	— @ —	3 @ 5
WHORTLEBERRIES, ₱ bush	— @ —	2 00 @ 3 50
MAPLE SUGAR, ₱ lb	6 @ 10	6 @ 10
MAPLE SYRUP, ₱ gallon	65 @ 1 00	70 @ 1 00

Gold has been up to 112¾, and down to 111⅞, closing July 12, at 111⅞, as against 112½ on June 12, and 112⅝ on May 13....Breadstuff movements have been much less extensive, since our last; and with improved crops and depressed market reports from Europe, free arrivals here, increased urgency to close out supplies, lower gold, and firmer ocean freights, our market has been quoted much lower, and toward the close, very unsettled, with less of an export inquiry for Flour and Grain, and a comparatively moderate home trade call. Much of the Wheat and Corn received here, during the month, arrived in poor order, which the very warm weather tended to aggravate, and thus render the sale of such stock extremely difficult, and, as to values, more or less demoralizing. Considerable quantities of Flour have been spoiled by the warm weather, and this also added to the depression. At the close, receivers generally were eager to realize on their holdings; and, with little of an encouraging tenor in the advices by cable, prices ruled weak, even on the modified basis. Sundry lots of new Winter Wheat (of fine quality) from Texas, Tennessee, Virginia, and Delaware, and of new Flour from St. Louis, Tennessee, etc., have come to hand, since our last. New crop of White Oats of choice quality from New Jersey (Monmouth Co.) brought 44 cts. on Tuesday, July 11....Provisions, and Cotton, have been less active, and lower and irregular in price....Wool has been attracting more attention, and toward the close on a steadier basis as to prices for desirable lots of domestic product....Tobacco has been fairly active, and generally firm in price....Hay, Hops, and Seeds, have been less sought after, and quoted easier. ....Naval Stores and Petroleum have shown more firmness, with a better demand noted....Ocean Grain freights have been more active, at stronger rates. Grain rates by steam to Liverpool, closed on the 12th July at 9*d*; to Glasgow at 8½@9*d*; to London at 9*d*; to Liverpool, by sail, at 8*d*; London, by sail, at 8½*d*. per bushel. Provisions by steam to Liverpool, 40*s*.@50*s*. per ton; Cotton at 5/16*d*. ₱ lb. Grain tonnage for Cork and orders, at 6*s*.3*d*.@6*s*.6*d*. per quarter. Grain rates from San Francisco to Liverpool, for the maturing crop, quoted at 62*s*.6*d*.@67*s*.6*d*.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending July 13th, 1876, and for the corresponding month last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
24 d's *this* m'th	331,000	4,937,000	2,405,000	239,000	141,000	1,216,000
24 d's *last* m'th	269,000	5,417,000	1,311,000	357,000	205,000	1,067,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
24 d's *this* m'th	363,000	2,376,000	2,613,000	143,000	—	986,000
24 d's *last* m'th	329,000	4,454,000	3,101,000	381,000	15,000	1,111,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
24 days 1876	331,000	4,937,000	2,405,000	239,000	141,000	1,216,000
24 days 1875	279,000	8,918,000	2,312,000	23,000	—	815,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
24 days 1876	363,000	2,376,000	2,613,000	143,000	—	986,000
24 days 1875	417,000	5,391,000	1,983,000	31,000	—	2,117,0.0

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
July 10, 1876	2,189,729	296,727	61,508	15,675	1,014,047	482,069
June 9, 1876	1,121,203	625,818	3,969	15,674	885,042	507,157
May 8, 1876	1,563,826	172,090	16,365	33,501	437,387	450,643
Apr. 10, 1876	3,393,074	252,140	68,429	200,381	706,282	436,942
Mar. 6, 1876	4,473,633	302,026	82,562	441,078	757,457	377,278
Jan. 10, 1876	5,802,393	663,982	100,741	325,191	1,080,300	307,438
Dec. 7, 1875	5,378,036	816,962	99,908	305,961	1,252,005	258,364
May 11, 1875	969,804	1,542,924	16,124	16,537	545,209	229,635
Jan. 11, 1875	3,675,122	1,049,900	50,889	191,470	877,014	145,617

4. *Exports from New York, Jan. 1, to July 12.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
1876	1,043,422	15,760,398	8,398,861	54,623	28,072	272,584	610,920
1875	923,289	10,638,507	6,008,198	105,687	165	61,840	218,169
1874	1,182,136	20,601,800	10,185,019	513,622	240	62,603	253,765
1873	658,482	6,377,645	6,531,315	192,676	19,226	17,578	53,030
1872	448,080	4,202,506	11,967,765	396,329	22,656	17,215	115,066
1871	963,331	8,193,157	4,824,872	43,018	83,679	14,889	—
1870	880,626	7,691,408	164,468	65,734	—	9,733	—
1869	605,950	6,260,268	1,481,849	68,536	—	42,257	—
1868	481,663	2,956,532	4,044,602	158,093	—	30,998	—

5. *Tide-water Receipts at Albany, from opening of navigation to July 1:*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
1876	10,009	5,309,900	781,700	243,500	91,000	1,049,100	193,900
1875	11,700	3,217,700	824,700	53,500	—	755,600	377,900
1874	17,900	8,618,000	4,190,000	174,100	74,100	996,200	—
1873	52,100	3,556,700	3,518,100	293,100	12,200	810,400	—
1872	32,200	1,682,800	6,516,000	203,100	451,500	1,561,200	—
1871	78,700	4,328,300	4,238,000	46,200	40,100	999,600	—

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*	*Tot'l.*
June 19	8,184	24	3,983	18,613	19,019	48,823
June 26	9,372	90	2,912	25,402	24,125	62,401
July 3	8,067	59	3,593	27,667	26,717	62,103
July 10	8,808	61	2,087	24,229	15,131	50,919
Total for 4 Weeks	34,931	234	12,575	95,911	79,505	253,246
do. for prev. 4 Weeks	37,057	241	17,352	97,164	88,899	240,713
Average per Week	*Beeves.* 8,732	*Cows.* 58	*Calves.* 3,144	*Sheep.* 23,980	*Swine.* 19,893	
do. do. *last Month*	9,264	60	4,838	24,291	22,224	
do. do. *prev's Month*	9,129	50	3,214	16,185	21,085	

Beeves.—The hot weather of the past two weeks, which has been unprecedented for more than 30 years, has not been in favor of an improved market. On the contrary, the tendency has been steadily downwards, and as we close our report, we have no improvement to note in prices, although the general feeling was more lively and encouraging. Shipments to Europe continue, 290 head having been sent out to Scotland last week; this destination having probably been chosen that the beef may appear in the London market as choice Highland, for which the quality is good enough. How long a business can continue on such a basis, however, is a question. Prices at the close were 9@9¾c. per lb. for native steers, 55@56 lbs. per gross cwt., and 10@10¼c. for prime beeves of 56@57 lbs. estimated per cwt.

The prices for the past four weeks were as follows:

WEEK ENDING	*Range.*	*Large Sales.*	*Aver.*
June 19	7 @10¾c.	9 @10 c.	9½c.
June 26	7 @10¾c.	9 @ 9¾c.	9¼c.
July 3	8¼@10¾c.	9 @ 9¾c.	9¼c.
July 10	8½@11 c.	9 @10 c.	9½c.

Cows.—The market has been dull and without change at $40@$50 each for poor cows, and $60@$75 for choice, calves included....**Calves.**—The business has been fair, and with light receipts, prices have improved. Poor calves have sold for 4@5c. ₱ lb., and veals at 7@8¾c. ₱ lb. for N. Y, Jersey, and Pennsylvania....**Sheep and Lambs**—There has been a very slow demand for this stock, especially poor qualities—good stock has sold freely. The prices paid at the close were 4½@5¼c. ₱ lb. for sheep of 75 to 102 lbs., and 6½@9½c. ₱ lb. for lambs, according to quality; Virginia selling for the lower quotation, and New Jersey 68-lb. lambs at the higher. ....**Swine.**—Receipts of hogs for the first half of 1875, were 754,548, and for the same period in 1876, 597,319. This is a large falling off with which to meet a fair average demand, and should be taken into account in estimating probabilities. The market has improved during the past month, closing with a light supply at 8@8¾c. ₱ lb. for city dressed, and 8¾c. for light pigs.

Prices of Feed.

Bran, per ton	$18.00@$20.00
Middlings, per ton	19.00@ 21.00
Ground Feed, per ton	15.00@ 21.00
Linseed-oil-cake, western, per ton	44.00@ 47.00
Cotton-seed-cake, per ton	25.50@ 40.00
Chandler's Scraps, per ₱	3@ 4

Prices of Fertilizers.

No. 1, Peruv. Guano (6.30 p. ct. ammonia) ₱ ton	$56.00
" " " (Rectified), per ton	61.50
Mapes' Nitrogenized Superphosphate, per ton	45.00@ 50.00
" Plain Superphosphate (mineral), per ton	30.00@ 35.00
" Bone Superphosphate, per ton	40.00@ 45.00
" Prepared Fish Guano, per ton	35.00@ 40.00
Fish Guano (crude in barrels), per ton	24.00
Bone Black, per ton	25.00@ 28.00
Bone Flour, per ton	40.00@ 45.00
Rawbones Ground (pure), per ton	38.00@ 40.00
Rough Bones, per ton	22.00@ 25.00
German Potash Salts, (25@35 per cent.), per ton	20.00@ 25.00
Gypsum, Nova Scotia, ground, per ton	8.00@ 9.00
" In barrels, per bbl	1.25
Wood Ashes, per bushel	16 c.@18 c.
Nitrate of Potash (95 per cent.), per lb	8½c.@ 9 c.
Chloride of Potass, (muriate of potash, 80p.c.), lb	2¾c.@ 3¼c.
Nitrate of Soda, per lb	4 c.@ 4½c.
Sulphate of Ammonia (25 per cent.), per lb	5 c.@ 5½c.
Dried Blood or Dried Meat per unit of ammonia	$3.00@ $ 4.00

containing a great variety of Items, inc'uding many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

☞ N.B.—The New Postage Law.—On account of the new postal law, **which requires pre-payment of postage by the publishers,** each subscriber must remit, in addition to the regular rates, **ten cents for prepayment of yearly postage by the Publishers, at New York.** Every subscriber, whether coming singly, or in clubs at club rates, will be particular to send to this office postage as above, *with his subscription.* Subscribers in British America will continue to send postage as heretofore, for pre-payment here.

Remitting Money: — Checks on New York City Banks or Bankers are best for large sums; make payable to the order of **Orange Judd Company. Post-Office Money Orders** for $50 or less, are cheap and safe also. When these are not obtainable, **register** letters, affixing stamps for postage and registry; put in the money and seal the letter in the presence of the postmaster, and *take his receipt for it.* Money sent in the above three methods is safe against loss.

Bound Copies of Volume Thirty-four are now ready. Price, $2, at our office; or $2.50 each, if sent by mail. Any of the last nineteen volumes (16 to 34) will also be forwarded at same price. Sets of numbers sent to our office will be neatly bound in our regular style, at 75 cents per vol. (50 cents extra, if returned by mail.) Missing numbers supplied at 12 cents each.

Our National BAZAAR this month, contains the usual assortment of good things, advertised by trustworthy men. It will always pay any one to look all through the advertisements, and see what is offered, by whom, at what price, etc. Many a man has got a valuable new idea from seeing what others say about business matters, which has started his own thought in a profitable direction. When writing to any of our advertisers, for information, catalogues, etc., or sending orders to them, please let them know that you belong to the great *Agriculturist* family, and you may expect and will receive good treatment. Our advertisers know that we carefully exclude any one who does not promptly perform what he promises in his advertisement.

Speak a Word for the German American Agriculturist.—For 17 years past an edition of this journal has been issued in the German language for the benefit of the large number of our citizens who read only the language of Vaterland. It contains the engravings and all the principal reading of the English edition. Several pages devoted to the advertisements in the English edition, are in the German edition occupied by a special extra Department, edited by the Hon. Frederick Münch, a distinguished cultivator of

Missouri, which gives it additional value to the German reader. The colored cover only is omitted from the German edition. Many of our subscribers take the German copy for their gardener or their workmen. Will our friends make this edition known to their German friends and neighbors? Having the advantage of the engravings of the English edition, it is larger, better, and cheaper, than it could be if published independently. Both editions are issued on the same terms, and clubs may consist of either edition, or a part of both.

Crib-Biting.—"S. G.," Sheboygan Co., Wis. Crib-biting is often a habit, but may be caused by a disease. Indigestion occasions a constant irritation and uneasiness, which may impel the horse to take hold with the teeth, and stretch the neck as a means of relief. From this grows the habit of crib-biting and wind-sucking, which ceases when the cause is removed. As a remedy give the horse in his feed, daily, for a few weeks, one dram of copperas, and half an ounce of ground ginger, and feed him upon cut feed, with crushed or ground grain, and an ounce of salt in each feed.

The American Institute of the City of New York will hold its 45th annual exhibition this fall, opening on the 6th day of September next, and continuing until late in November. This exhibition promises to be unusually interesting, inasmuch as special effort is being made this Centennial year to have the leading industrial operations carried on upon the premises, and a special award of a gold medal is offered for this year, to be known as the "Centennial Medal." The American Institute is the oldest of all societies of its kind now in existence, and is not in any sense a private corporation, its earnings being devoted by its charter to the encouragement of home industries. For blanks and all information, address General Superintendent, American Institute, New York City.

Concrete Houses.—"J. McC.," Monroe Co., Mich. Concrete houses are very dry and healthful, the walls being porous, are very effective non-conductors of heat. They are also durable when properly built. We know of no objections to them where the materials can be easily and cheaply obtained.

Crude Petroleum as a Priming.—"W. S.," St. Francisville, Ill. Crude petroleum needs no mixture to give body when used as a priming coat. It soaks into the wood very thoroughly, and is apt to leave upon the surface any solid matter that may be mixed with it. It fills the pores of the wood, and the surface is left in good condition for a coat of oil paint.

Root Cellars and Pits.—"S. H.," McDowell Co., Va. Descriptions and engravings of houses and cellars for storing roots, were given in the *American Agriculturist* for October, 1873, and in the same number was given a method of keeping roots in pits. Back numbers can be had for 15 cents each.

To Get Rid of Sassafras.—"J. W. M.," Queensville, Ind. Sassafras bushes may be eradicated by deep plowing and harrowing, by which the roots are brought to the surface, and may be picked up. Any sprouts which may grow after this, can be kept down by planting potatoes and corn, and keeping them hoed. The sprouts will be weak, and if kept hoed down perseveringly, may be killed out in two years.

Trial of Mowers in Switzerland.—Adriance, Platt & Co., inform us that at a field trial of mowers, held at Luzerne, Switzerland, the Buckeye, of their manufacture, was awarded two first prizes in competition with several other first class machines.

Disease of the Mouth. Aphtha.—"P. O. T.," Preston Co., W. Va. Cattle and sheep are subject to a disease of the blood known as aphtha, which appears as an eruption of blisters upon the lips and tongue. The blisters break, and the raw surfaces become very sore and painful, preventing the animal from eating. The proper treatment is to give half-a-pound to a pound of Epsom Salts in one dose, in some linseed gruel, and afterwards wash the mouth with salt water, or place a handful of salt in the mouth twice a day, until the sores heal. The food should be linseed or oatmeal gruel.

Plum Sprouts Upon a Willow.—"J. B. Z.," Tremont, Pa., sends us leaves of a plum-sprout which grows out of the stem of a willow, of which the leaves are also sent. One plum sprout appears about 5 inches and the other 3 feet above the base of the willow. We have no doubt that a careful examination will show that the plum has been in some manner included in a crack or split of the willow, and that when the tree is cut down, the plum will be found upon its own roots.

CENTENNIAL

TRIAL TRIP!

FARE ONLY

Seventy-five Cents

CURRENCY.

A $50,000 VOYAGE

For **75** Cents.

AT LEAST

1,000,000 PEOPLE

who don't have the *American Agriculturist* **ought** to **have** it, and they *would* have it, *if* they knew what it is. . . The Publishers wish to strongly tempt them to look into its merits, and ascertain for themselves, whether or no it is worth taking regularly thereafter;

Therefore

they offer to send this Journal "on trial" from **July 1st** to the end of this year, (six months),

POSTAGE PAID,

For only 75 Cents.

This unusual offer only open to Aug. 10.

It will cost about **$50,000** to issue this Journal for six months, and every Trial Trip Subscriber will get the full benefit of all the expense, beautiful Engravings, first-class reading, etc., etc., **all** for 75 cents. *(See* **"Still Better"** *below.)*

TELL ALL

YOUR NEIGHBORS.

Will **Our Friends** please tell all their friends and neighbors of this offer, and let 1,000,000 new people be invited to the feast of Good Things which we shall place before them and *all* our Readers during the coming six months.

Still Better!

Every Trial Trip Subscriber, who sends 75 cents for the *American Agriculturist* for six months, as above, may also select one of the **BEAUTIFUL CHROMOS,** offered on 4th cover page, and it will be sent to him **free,** as there offered, (on forwarding the small sum named [25 cts.] for mounting, packing, and delivery.)

☞ **Thus, a single dollar will secure the paper post-paid for six months, and a Mounted, beautiful Chromo, delivered, —a picture which would be an ornament in any home.**

Proper Heat for Incubation.—"O. M.," Jackson, Mich. The greatest heat that can be permitted in an incubator, is 102 to 104 degrees. It will not injure the eggs if they are left to cool down to 90 degrees, or even less, for a few hours occasionally, except when the chick nears maturity. At this period hens keep their nests closely, but at other times leave them for hours at a time. A heat of 109 degrees would be fatal to the eggs.

The Exhibition of Mowers at Philadelphia.—The exhibition of mowing machines in connection with the Centennial Exposition, took place a few miles from Philadelphia. It was not competitive, and 23 different makers were represented. The grass was of the easiest kind to cut, being clear timothy, rather thin, and standing up perfectly straight. No difficulty was met with, until the chairman of the International Jury on Implements, ordered the grass to be rolled, the roller being drawn ahead of the machines. To pick up this laid grass was found to be difficult for most of the machines, and impossible for some of them, only one or two making fair work. Some of the newer machines, with unusual motive appliances, attracted favorable notice. These were without gearing altogether, as the "Haymaker," exhibited by Otis Brothers, or with a reciprocating screw in place of gear wheels, as the Reciprocating Screw Machine of Goodwin & Co. The rolling of the grass was a novel and unexpected test, and one that could hardly be met with in actual practice here; yet the perfect machine ought to be able to pick up grass however badly it may be laid.

Blight and Electricity.—"H. S.," Oneida Co., N. Y. Your "true theory" of blight is a very old one, as it has been ascribed to electricity many years ago. Your citing the well-known phenomenon of St. Elmo's Fire as proof that "trees conduct electricity," shows a want of familiarity with electrical laws. We can not suggest a trial of the proposed remedy, as it is founded upon an entirely incorrect assumption.

Weight of Yearling Bullocks.—"C. O. C." We do not remember of any bullock, 18 months old, reaching a greater weight than one mentioned in Youatt's British Cattle, the four quarters of which weighed 945 pounds. This would give a live weight of about 1,600 pounds.

Guessing at a Plant.—"J. H. S.," Atlanta, Ga., writes: "I found in the street a Convolvulus, which, being planted, gave me a double flower, something like a pink rose."—Had he sent a specimen, we could be sure, but now we can only guess that it is the *Calystegia pubescens*, sometimes called "Rose Morning-glory," and a very pretty thing it is, but one which we would advise our friend to get rid of as soon as possible, as a more troublesome weed does not exist.

To Manage a Corn-Stubble.—"C. N. A.," Denville, N. J. If a corn-stubble is to be sown to wheat, the corn should be removed from the ground, and the stubble plowed under. A frequent method is to sow the seed upon the stubble, and then cover it by plowing a light furrow; the surface is then harrowed, or may be left rough, which, we believe, is best.

Bloody Milk.—"S. H. D.," Council Hill, Iowa. Blood in the milk may be due to an inflamed and congested condition of the udder. It may be sometimes cured by giving the cow a cooling medicine, such as 8 to 12 ounces of Epsom salts, and frequently bathing the udder with cold water.

Introducing New Plants.—"C. W. C.," Andover, Mass., asks if the cotton of Mantchooria, where the climate is as cold as that of the New England States, would not succeed in those States. Temperature is but one element—though an important one—in the case, and while we may guess at the probabilities, we can not be at all sure that a plant will succeed in a given locality until it is tried. The same correspondent asks why it would not be a good thing to try the Kerguelen's Land cabbage. It would be well to *try* it, if one could get the seeds, but as all the accounts of this come from mariners, who had long been without a "fresh mess," it is very likely that its excellence is overrated, and that upon actual trial this would be found vastly inferior to a good Savoy, or even a drumhead; we know from experience that the estimate of those who have been long deprived of vegetables and fruits, must be received with caution, as under such circumstances anything of the kind seems dilicious. We recollect an occasion, when having been deprived of all fresh vegetables for several months, that we came across a purslane, very much like our garden "pusley." This when cooked as an accompaniment to the daily salt pork, seemed at the time of supreme excellence. We doubt if the Kerguelen Land Cabbage would tolerate our hot and dry weather.

Harvard Examination for Women.—Harvard University has held annual examinations for women, at Boston, ever since 1874, and as will be seen by an advertisement, it is proposed to commence holding the examinations in New York also. There are many women who are pursuing studies by themselves or under teachers, either in special subjects, or the usual college course, who wish to know what progress they are making, and who propose to submit their acquirements to the test of an examination before the faculty of one of our leading universities. It will be surprising to many to learn that there are so many women engaged in the higher branches of study, as to make such examinations practicable, or desirable. Those who would know more about the matter, can learn full particulars by addressing Secretary of the Local Committee, No. 60 Fifth Av., N. Y.

Thomas' Fruit Culturist.—When Messrs. Wm. Wood & Co. first issued the new edition of this work, we called attention to the fact; we then understood that it was to be sold only through agents, and was not easily to be procured, we did not say much about it, but we learn that it is in the trade, and can be had by any one. Those who know John J. Thomas, need not be told that any work he may write, will be thorough and reliable in every respect. We have commended the former edition of the Fruit Culturist in the highest terms, and need only to say that the new edition is brought up to the times, and is one of the very best works of the kind. The publishers have done their part well, and it is handsome as well as useful. Sent by the Orange Judd Company for the price, $3.75.

The Amsden Peach.—This new variety appears to have this year substantiated the claims made for its great earliness. Some of our exchanges have noted its early ripening, and we have a letter from Mr. Wampler, of Carthage, Mo., who has been instrumental in introducing it, which states that it ripened there on June 27th, which is a little earlier than ever before. Mr. W. states that the severe cold of March 15th destroyed the peach crop generally, and only a few trees of the Amsden, in a sheltered garden, escaped. One specimen of the Amsden measured 7¼ inches in circumference. We shall be glad to hear how this new variety has done in other localities.

The Botany of California.—The Legislature of California having failed to provide for the publication of all the reports of the Geological survey of the State, several of the leading citizens have furnished the means for publishing the botanical report. The first volume is just out, a 4to. of over 600 pages, and contains the Polypetalous plants, by Profs. W. H. Brewer and Sereno Watson, and the Gamopetalous by Prof. Asa Gray. It is expected that the second volume, containing the remaining families, will follow in due time. A limited number of copies may be obtained at $6 each, on application to Prof. Watson, Herbarian of Harvard University, Cambridge, Mass.

Centennial Editions of Poetry, appropriately so-called because in the Centennial year the price is 100 cents. For the low price of $1, Messrs. J. R. Osgood, Boston, give in paper covers, but with fine paper, type, and illustrations, the complete poetical works of several authors. Those of Longfellow, Whittier, and Tennyson, have already been published, and others are to follow. Cheap, but choice.

Forest and Stream Hand-Book for Riflemen is the title of a neat little work by Major Geo. C. Starr, published by J. B. Ford & Co., New York. Members of the numerous rifle associations, and those about to form such organizations, will find this a most useful hand-book. Sent from this office for 50 cts.

Thistles.—"S. S. W.," Clearfield, Pa. The best time to kill thistles is the first time you see them. If you see them before they seed, so much the better, if not, mow or hoe them down as soon as possible. There is no better time than now, when they are in full growth. Cut them close to the ground, and the probability is that most of them will die from the shock to the roots and the uncongenial character of the fall weather for their recovery.

The Appletons and Science.—Messrs. D. Appleton & Co., besides publishing the admirable Popular Science Monthly, and various American scientific works, are doing much for the advancement of the various branches of science by their reprints. No sooner does a work of value appear upon the other side, than it is reproduced by this house, and at once placed within the reach of American students in an admirable form. Among the works recently reprinted by this house are "Air and its Relations to Life," by W. N. Hartley, an admirable work, and a useful one. The "Memoirs of Caroline Herschel," by Mrs. John Herschel; "The Warfare of Science," by A. D. White, and the "Short History of Natural Science," by Arabella B. Buckley. The last named work is noticed more in full elsewhere, the item being by Prof. Asa Gray, than whom no one is better able to place a proper estimate upon such a work. The "Science Primers" are continued by the publication of No. VIII, "Botany," by Doct. J. D. Hooker. The same house will soon issue under the title of "Darwiniana," the various articles contributed by Prof. Asa Gray, to different periodicals upon Darwin and his writings.

Market for Mohair.—Messrs. Hall & Turner, of the Jamestown Alpaca Mills, write to correct an impression that they are anxious to purchase mohair, or the wool of the Angora goat. They say that most of the mohair offered them is useless for combing, on account of ignorance in breeding the goats, and preparing the fleece. They have simply agreed to receive and sort the clip for some growers in California, Georgia, and Tennessee, and to dispose of the refuse after they have selected what they require for their own use. The present condition of business makes the sale of the discarded portion of the fleece very difficult.

Concrete Houses.—"E.," Villa Ridge, Ill. In the *American Agriculturist* of December, 1875, we gave a very full article upon building concrete houses, with many illustrations of the needed appliances. A natural mixture of sharp sand and pebbles will make very good material if used in proportion of eleven parts to one of hydraulic lime, or two of common lime. It would be well to screen the sand from the pebbles, and then add the pebbles to the ready mixed mortar made of one part of hydraulic lime, or two of common lime to four of sand.

Berkshire Swine Record, Vol. I.—We have received a copy of the first volume of the Berkshire Swine Record, which contains 1,090 entries, list of owners' names, and a handy index. The work of compilation has been very carefully performed by the editor, A. M. Garland, Esq., Secretary of the Berkshire Swine Association. We find on looking through the pedigrees but one evident error, this being in entry 606, a record of Manchester Lass 4th, 606, farrowed August, 1874, out of Manchester Lass 3rd (604), sire, Earl Granville, which conflicts with entry 610, a record of Manchester Lass 5th, farrowed May 18th, 1874, out of the same sow 604, and by the same sire, but both raised by different breeders. An error of this kind may give the editor of future volumes some little trouble in unraveling the intricate pedigrees of the descendents of so prolific an animal as a sow.

Cost of a Mowing Machine.—The cost of a mower to a good farmer is much less than to a poor one. A good farmer will keep a machine in good condition for a dozen years without any repairs but to replace a few bolts, the cutting blade, or a few knives, while others will use up a machine in three or four years. The difference is, that a machine may cost a good farmer $20 a year, and cut his grass for 25 to 50 cents an acre, while to a poor one, the cost is perhaps three or four times this amount. One of the most costly wastes upon the farm is the too common neglect of machinery.

Fruit Preserving Powder.—When an advertisement of an article of this kind appears in the *American Agriculturist*, that is of itself evidence that the article has been examined, that we know of what it is composed, and that, did we wish such an article ourselves, we should not hesitate to use it. Persons not knowing our rule in this respect, have made inquiries about fruit preserving powders. To such we would answer, that there are various articles that prevent fermentation in fruit; common salt will do this, but is not palatable in fruit; the inventor of the Fruit Preserving Powder has hit upon a substance that answers the same purpose that salt would, though much less is required, and is nearly tasteless. So far as known, it has no effect upon the system, and we have not hesitated to use fruit preserved by it.

Sale of Horses at Woodburn, Ky.—The annual sale of Mr. Alexander's yearling horses at Woodburn occurred last month. The prices were higher than ever before, averaging $674 on 60 head. The gradual increase in value of this stock is shown in the following figures, which represent the averages for the produce of the choicest sires for the past six years:

	1871	'72	'73	'74	'75	'76
Lexington.	$1,145	$1,247	$1,368	$1,195	$1,755	$1,559
Australian.	387	1,077	832	753	958	832
Planet.....	402	774	514	300	383	483
Asteroid...	313	514	176	209	792	549

Sugar and Sorgho Machinery.—The Blymyer Manufacturing Co., Cincinnati, O., some years ago by their inventions and the appliances they introduced, added greatly to the wealth of the country, by enabling sorgho growers to convert their crops into a marketable product. They still continue to make sorgho machinery, and in addition they supply apparatus for manufacturing syrup and sugar from the true sugar cane. The cultivation of the cane in quantities for the home or neighborhood demand is rapidly increasing in all the Southern States, and this firm supply apparatus suitable for working up the crop of a few acres or that of a large plantation. We saw their Victor Evaporator at work last fall, turning out a beautiful product with little labor or fuel. Their catalogues illustrate the apparatus in full.

Fine Lilies.—Beach, Son & Co., Seedsmen, No. 7 Barclay st., not only sell lily bulbs, but raise fine lilies; their store has been gay for some time with the brilliant and fragrant flowers of these bulbs.

Sundry Humbugs.

This long continued heated term in the early part of July is not only debilitating to the body, but causes the mind to take anything but a cheerful view of matters. As we took up the accumulation of letters of complaint and inquiry, the reports, circulars, pamphlets, and all the rest of the materials that accumulate and make up our monthly Budget of Humbug, the mercury was trying to see how far it could get above 90°, and the hot air swept in at the window in a most discouraging manner. "After all," thought we, "what is the use? What good does it do to try to help people by pointing out the traps and pitfalls set for them; here we have been for these many years showing up the folly of all lotteries, and the rascality of most of them, we have tried to keep the community from losing its money in swindling schemes, and risking its health by running after quack medicines and shyster doctors. We have kept at this, winter and summer, year after year, and yet on this torrid July day, here is a mass of evidence that swindling has not abated, and that there are scores of people who have been, or badly want to be, humbugged. It's all of no avail, and just labor wasted. Humbugs exist because they are a necessity in our state of society. We have fought the thing almost single-handed long enough. We make no progress, it does no good. The weather is too hot to bother with human folly and wickedness, and the Humbug column for August may go by."—It was with such thoughts that we pushed aside the disgusting budget and took up the morning paper for a change of thought. Our thoughts did change, and ran somewhat as follows:

"HURRAH FOR CONGRESS!"

"Now here is something worth while. 'The constant drop will wear the stone.' There is no fort so strong that it cannot be taken if the besieger keeps pegging away. It is refreshing to find effective help at last. No doubt that our unremitting exposures, winter and summer, have done much to bring this about. Steady work does tell after all. 'Hot?' Yes, a little, but one don't mind it much if he keeps at work. Excuse us, we can't stop to talk about the weather. Humbugs have to be written, weather or no weather."—Perhaps the reader will wonder what produced such a sudden change in our way of looking at things. It was an item under the Washington news, that Congress had passed

A BILL TO SUPPRESS LOTTERIES,

the second section of which reads as follows: "No letter or circular concerning lotteries, so-called gift concerts, or other similar enterprises offering prizes, or concerning schemes devised and intended to deceive and defraud the public for the purpose of obtaining money under false pretenses, shall be carried in the mail. Any person who shall knowingly deposit anything to be carried by mail in violation of this section, shall be punishable by a fine of not more than $500 nor less than $100, with costs of prosecution."—This has passed both the Senate and the House, and has gone to the President for his signature. It is hardly within the possibilities that "veto" will be placed upon a law so eminently proper. Deprive swindlers, of all kinds, of the use of the mails, and they will soon be forced to work for a living. It is a pity that the same penalties could not be made to apply to those papers which advertise such schemes. Still the above is a great step gained, and *if enforced*, will well nigh put an end to one species of the genus humbug. We shall get the entire act soon, and hope to

find that it is accompanied by ample provision for its enforcement.—Good for Congress!....We have in former articles given what seems to us sufficient reasons why lotteries that are conducted fairly, according to their terms, were an evil that should be suppressed; but the fact is that most of the schemes announced as lotteries, gift distributions, prize concerts, or by whatever name, are not conducted according to the rules governing lotteries, but are barefaced swindles. Prominent examples of these frauds are the

TOPEKA (KAN.) AND WYOMING LOTTERIES,

about which we have had scores of letters asking if we included them as humbugs. The "Kansas Farmer," which had heretofore done good work in showing up the Topeka lottery, in its issue of June 14, last, gives an account of the drawing, which in violation of the published conditions, was conducted *privately;* it says: "The concern was the most outrageous and unblushing piece of villany ever perpetrated under the guise of public charity." This shows what is thought of this lottery at home in Topeka. If any of those who have written to inquire about this lottery have lost the money they invested, we can quote for their benefit still further from the outspoken "Kansas Farmer," which says: "People who are such consummate fools as to place money in the hands of dishonest, irresponsible gamblers, expecting they would deal honestly with them, deserve to pay for the lesson they are sure to receive."

THE WYOMING LOTTERY, AT LARAMIE,

has already had some of its dark ways exposed in these columns. This is managed by one Pattee, who happened to visit Topeka, Kan., and the editor of the "Farmer" describes an interview with him, and says: "He seems to delight in boasting of his own villainy in swindling weak human nature. He said his conscience did not trouble him, that the people wanted to be humbugged, and it was his business to do it."—We regard this Wyoming as the most pernicious of all lotteries, as it is a sort of perpetual thing, and managed with great tact and perseverance, and its schemes find their way to the most remote places. The papers of New Brunswick state that some counties at that distant Province are flooded with the flaming circulars of this Wyoming scheme, and that the number of tickets reported to be sold is "something fabulous." One paper, the Sackville "Borderer," goes so far as to print a letter from some one claiming to be connected with the lottery, who proposes, for a consideration, to insure a prize at the next drawing, as he is in a position to do a little cheating. Sensible people do not need to be warned against all lotteries, however tempting their offers, and we are glad to know that the law has been passed to protect the weak and foolish from these swindlers.

SEVENTY-FIVE CENTS WORTH OF INFORMATION

was purchased by a young man in Ohio who sent all the way "down East," as far as Portland, Me., to get it. He writes: "I sent 75 cents to him about a year ago for a watch chain which was to be as *good as gold*, and wear as long and as bright. When the chain came it was nothing but brass,"—Our correspondent paid 75 cents to learn that cheap jewelry, no matter by what name it may be called, is cheap, and that people even down in Maine do not give more than 75 cents worth for three-quarters of a dollar. As the concern advertises largely, and publishes many circulars, with engravings of the jewelry, which are expensive, whatever the articles themselves may be, it is probable that this 75 cent chain itself did not cost the sellers over 25 cents, if as much.

MORE CHEAP BUTTER.

The "Golden Butter Compound" seems to have fizzled out; we have sent several times to a place advertised as a "depot," but no one is to be found. It is just a place to receive letters, for such chaps work at arm's length, and avoid coming face to face with purchasers. Still cheap butter is not to die out, for there is a chap who now makes two pounds of butter out of a pound of butter and a pound of sweet milk, by the aid of "The Compound Vegetine Extract of Helianthus Annuus," to which is graciously added for the benefit of the unlearned, "or common sunflower." The circular would not be complete without some chemist's certificates. There is one from the "Laboratory of College Department of School of Mines," which is so very high sounding that it does not appear necessary to state where the "Laboratory" is situated. This sunflower stuff has an advantage over the "Golden Butter Compound," as it will not only make two pounds of butter out of one, but it will, if we are to believe the circular, make two gallons of sperm oil out of one. All you need is one gallon of sperm oil, one gallon of lard oil, and some of the sunflower stuff, and there you are, with two gallons of sperm oil worth $5. This is all well enough, but a round-about way to get at it. Why not feed the sunflower stuff to the pigs, and turn them into whales at once, and thus quadruple at once the value of the hog products of the country? ....In all our experience we have never known such a dead calm

IN MEDICAL MATTERS.

For months we have not had a single new "sovereign remedy," and it is the Centennial year at that. Nobody has discovered a "Mother Noble." No young fellow and his wife have escaped from a seven years' captivity among the Indians, and like Eddie Eastman, brought off all the Medicine Man's secrets. No one has been strolling by the seaside in a fit of despondency, and picked up the bottle that contained a recipe that restored him to life. No one has been among the Andes and found a new "Bell Tongue," or discovered any more "Seven Barks." All is weary, stale, flat, and unprofitable.

TO ALL WHO CAN READ

and understand what they read! We have stated many and many times that we had no confidence in any secret medical compounds whatever, and that we regarded their use as a great evil. We have stated as many times that we have no confidence in any one who advertises anything beyond the fact that he is a physician or surgeon. In our view all who advertise their ability to cure certain diseases, who parade accounts of their cures, and certificates of those they have treated; those who will contract to cure a case for a certain sum, or who advertise that they will return the money if a cure is not effected; those who profess to have any medicine, treatment, or appliance that is better than any other—in short the whole brood of advertising doctors—are unfit persons to employ. They come within our meaning of the term quack, and as we would not, no matter what and where they advertise, employ one of them in our own family, we can in no manner aid or abet any one else in employing, consulting, or having anything to do with them. Though we have stated this so frequently and so plainly, we have one or more letters daily, asking about some medicine or "doctor" of the above classes, and we must once more repeat, and ask our friends to remember, that our acquaintance among medical men is confined to physicians of good standing in the community and among their professional brethren. We do not personally know a single one of those who call themselves doctors, who living in New York advertise and send their circulars to distant points. These chaps know our views too well to seek our acquaintance, and it is not possible for us to seek theirs. Therefore, all letters of inquiry about such persons must be met by the simple answer that we know nothing about them. To recapitulate, we can give no information about secret medicines, we do not know any advertising doctors; we do not associate with men who claim to cure fits, or women who advertise to cure catarrh; and we know nothing of the persons who offer gimcracks with which people may make risky experiments on their own eyes and ears. We know none of these, and similar people, personally, and only judge of them by the circulars they put out and the articles they offer. It is therefore useless to ask us if they will do as they agree. We don't know the parties, and all the answer we can make is to that effect. While we do not hesitate to criticise what these persons offer, and do so freely, we are not in the way of knowing anything about their private lives or pecuniary responsibility. We feel sure that the community would be better off in health and pocket, did all these medical pretenders get their living in some other manner.

LOOK OUT FOR THE LAW!

Since the foregoing was in type, we learn that the bill for excluding all lottery and gift circulars from the mails here referred to, has been signed by the President, and is now a law. Now let post-masters do their duty, and the lottery nuisance will be essentially abated. No doubt some of the swindlers will contrive to evade the law, as the business is too profitable to be given up without a struggle, but they have no longer any right to use the mails.

The Oaks of the United States; by Dr. GEO. ENGELMANN. Dr. Engelmann has a way of taking up some difficult subject, studying it for a long while, and finally coming out with something satisfactory, or as near to that as possible. This on our Oaks—just published in a pamphlet of 20 pages, reprinted from the third volume of the Transactions of the St. Louis Academy of Sciences—is one of the best of his papers, and the most important, practically, because it deals with such useful trees as Oaks. It is written in English, and plain English too; so that any one with a moderate knowledge of botany, or a little patience and perseverance in studying it out, can use and understand it. Dr. Engelmann puts the Oaks into a good natural arrangement, points out the best characters for distinguishing the species, and brings in some new ones, derived from the way in which the leaves are rolled up, plaited, or otherwise disposed in the buds. He shows that the popular division into black oaks and white oaks, from the hue and nature of the bark, agrees with a scientific classification; that the wood of the black oaks, of whatever kind, is always brittle, porous, and comparatively worthless; while that of the white oaks is tougher, heavier, more compact, and furnishes the only sorts fit for the wheelwright or cooper's use. He distinguishes 28 species, including one very peculiar Californian one, (*Quercus densiflora*), of an Asiatic type, and in many respects more a chestnut than an oak; and he describes six hybrids—*Quercus Leana* is one of these, a cross of scarlet oak with shingle oak but *Q. heterophylla*, the Bartram Oak, he decidedly ranks as a species.

John Gilpin.—The last effort of Mr. C. M. Crandall, of Building Block fame, is a toy to illustrate the various incidents of the wonderful ride of John Gilpin, as set forth by Cowper in his "Diverting History." We have found that a really good child's book or story usually has sufficient merit to be attractive to grown people who are fond of children, and we do not doubt that this toy will afford amusement to many men and women, who, under the guise of showing the children, will derive no little pleasure themselves from renewing their acquaintance with the "undying verse" of Cowper, and in helping the little ones compose the most fitting illustrations to its lines. The advertisement on another page gives an idea of the toy and its uses.

The Franklin Institute of Pennsylvania.—This very old and very useful Association has a reception room in the north-western end of the Machinery Hall at the Centennial Exhibition, where visitors interested in the mechanic arts are invited to call, and where some member of the Institute will be in attendance to give information in regard to the exhibition The Institute has a fine collection of apparatus from which some articles of historical interest have been taken to the reception room; among these is the electrical machine with which Franklin made his experiments.

Percheron Horses.—Messrs. E. Dillon & Co., of Normal, Ill., inform us that two members of their firm are now in France, selecting twelve stallions with which they expect to return about August 20th.

Peruvian Guano Sold by Analysis and Guaranteed.—A much needed and very satisfactory arrangement has been made by the agents of the Peruvian government for the sale of guano; the price is fixed according to the valuable fertilizing constituents as shown by analysis, and the quality is guaranteed. Each cargo of guano as it arrives is mixed, the stones taken out and the lumps crushed, by machinery. It is then analyzed and bagged, each bag being stamped with the analysis and the price, and the trade-mark with the word GUARANTEED. A specimen of the marking of the analysis of the first cargo sold under this arrangement, handed to us by Mr. Chas. V. Mapes, 158 Front St., N. Y., the retail agent, is as follows:

CARGO A.

Ammonia	6.80%	at $3.50	$23.80
*Soluble Phos. Acid	3.80%	at 2.00	7.60
*Reverted " "	11.50%	at 1.60	18.40
Insoluble " "	3.00%	at 40	1.20
Potassa (Phosphate)	3.70%	at 1.50	5.55
Estimated Retail Price			$56.56
Marked on Bags for Sale			$56.00

*33.40% of total available Phosphates.

This innovation is very important and desirable, and cannot fail to be satisfactory.

Patrons of Husbandry at the Centennial.—The Patrons have an encampment at Elm Station, on the Penn'a. Railroad, three miles west of the Exhibition grounds. It is really an enormous temporary hotel, at which guests can stay for a very moderate price. Some of our friends who have been there say that it is plain but wholesome, and it affords an excellent opportunity to those who wish to visit the Exhibition as economically as possible. Though started for the benefit of the Patrons, any persons of good character are received, there being accommodations for 4,000 guests. For circulars address Board of Managers, Patron's Encampment, Elm Station, Montgomery Co., Pa.

Rust Proof Wheat.—"E. B. D.," Houston Co., Texas. Messrs. Landreth & Sons, of Philadelphia, made some extended experiments last year with several varieties of wheat and oats suitable for the Southern States. In their published reports we notice that some of these wheats were remarkable for their healthy foliage and the most vigorous of these would probably resist rust much better than other varieties. The report in full can be procured of Messrs. Landreth & Sons, Philadelphia.

A Sow Fails to Breed.—"W. W.," Richmond Co., Va. A sow that has failed to breed for two years, may be considered as hopelessly barren, and should be fattened for slaughter. There is no drug or medicine that can be relied upon to produce any effective condition of fertility.

Raising Turkeys.—"N. G.," Saginaw Co., Mich. The most successful turkey raisers feed the chicks for the first few days of their lives upon finely chopped, hard-boiled eggs, and keep them from wandering off by cooping up the hen. After the chicks are a week old, scalded wheat, or oaten grits and cornmeal may be given, but until they are fully fledged, they should be carefully protected from rain storms and wet grass.

Annattoine.—"J. E. B.," Clayborne, La. If coloring must be used for butter, we would use a preparation of annatto in preference to anything else, as it is perfectly harmless, and gives an excellent and natural looking color. A preparation which is largely used in creameries and cheese factories, and is prepared with especial care for this purpose, is supplied by O. S. Bliss, of Georgia, Vt.

A Short History of Natural Science, and the Progress of Discovery, from the time of the Greeks to the present day. For the use of Schools and Young Persons: By ARABELLA B. BUCKLEY. With illustrations. Miss Buckley was Lyell's secretary during the later years of his life, and wielded the pen that put upon paper many of the matured thoughts of this most painstaking writer and well-balanced thinker. She was thus brought in contact with many of the leading scientific men of our day, and she "often felt very forcibly how many important facts and generalizations of science, which are of great value in giving a true estimate of life and its conditions, are totally unknown to the majority of otherwise well-educated persons." Her endeavor to supply this want is every way commendable. As reprinted by the Appletons, almost in *fac simile* of the English original, it is a 12mo. volume of 467 pages; the last thirty or more containing a series of chronological tables of the rise and progress of the various branches of science, and a full index. We do not speak at random when we pronounce this to be just the book which many readers of the *American Agriculturist* want, and would elsewhere search for in vain. It is "short," but well-proportioned, clear, simple, and thoroughly reliable.

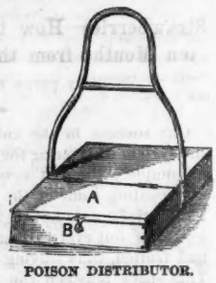
Business Pluck.—Some men are depressed by misfortune, but A. B. Farquhar, proprietor of the Pennsylvania Agricultural Works, is not of this kind. His large establishment at York, Pa., was destroyed by fire on the 7th of May—loss beyond the insurance nearly $100,000. On June 20th the Works were rebuilt, employing 200 hands, and prepared to execute all orders. The present factory is a fire-proof structure 120x200 ft., built in the most thorough manner, and furnished with the best machinery. Besides this, there are store-houses, detached shops, lumber yards, and other needed appliances, connected with one another by railways. Long before this notice appears, the establishment will be in full blast, turning out thrashing machines, horse-powers, and other specialties more rapidly than ever.

Firing Horses.—The practice of "firing" horses, although common, is one that is not advocated by the *American Agriculturist*, for the reason that it is painful, generally useless, and leaves an ugly blemish upon the animal. Evidence as to the easy possibility of avoiding this operation has been recently given by Mr. C. H. Maude, the manager of the stables of Queen Victoria, in which 200 horses are kept for use. Mr. Maude states that he has never used this operation in the 16 years during which he has superintended the royal stables, and finds that blisterings and rest produce better effects than the shrinking of the skin by "firing," for the purpose of producing a "natural bandage" and counter irritation.

Basket Items continued on page 313.

Poisoning Potato Bugs.

We have already given various devices for the application of Paris green in both the dry and wet state. No doubt any one of these, as well as other patented and unpatented appliances, will answer the purpose, but now that the application of this, or some similar poison, is likely to be a regular part of the farm work, it is very desirable that it should be done in the best possible manner. The first consideration in using the poison, should be safety to the operator; then come the questions of ease of application, low cost of apparatus, and economy of material. One of the best poison distributors that we have seen, and one which seems to meet all the above requirements, was invented by Mr. B. C. Arnold, of Chappaqua, N. Y., and is represented in the engraving. It consists of a shallow wooden box about 12 inches square and 3 inches high, made of ⅜-inch, or even thinner, stuff. The bottom of the box is covered with a piece of wire cloth, about as fine as that used for ordinary flour sieves; the edges of the wire cloth may turn up for half an inch all around, and be secured by nailing a thin strip upon each side. The upper part of the box has a hinged cover, A, which is fastened down closely by a hook, B. The handle is made of any convenient sapling, or other light, straight stick, bent in the form shown in the engraving, and securely nailed to the sides of the box; the cross-piece to the handle serves to keep it in shape, and may be used to hold the affair by if found more convenient. The Paris green and flour, thoroughly mixed, are placed in the box, which should be set upon a paper while it is being filled. The material will not pass through the wire cloth unless the box be roughly shaken or jarred. To use the affair, the operator takes it in one hand and a suitable stick in the other, and as he passes along the rows he gives the side of the box a tap wherever the presence of the bugs shows that poison is needed. The quantity deposited is regulated by the force of the tap, and as the box may be held down close to the vines, there is no danger of diffusing the poison in the air, or of scattering it where it is not needed. Generally the poison is most wastefully used, as the slightest dusting is all that is required. With a little practice one can dust two rows in once going through the field. Of course the use of this and all other methods of applying the poison, should be entrusted to an intelligent person who will work carefully and thoroughly. A little practice will teach such a person how high or low to hold the box, how hard to rap it, to pass by the vines where there are no insects, and only to use the poison where it is needed. In mixing the poison, the flour should be first sifted and the Paris green carefully stirred in, one part to 20 of flour, and the mixing continued until the whole is of an uniform color. We repeat, that the utmost caution must be used in keeping the poison and all utensils concerned in mixing and using it, in such a manner that no accident can possibly occur.



POISON DISTRIBUTOR.

Mr. Green, instead of patenting his useful invention, gives it for the benefit of his fellow farmers; he has found it so effective in his own experience, that he is desirous that it shall have the widest publicity, and on behalf of the potato-growers, we give him their thanks.

Agriculture at the Centennial.

The vast amount of work that has been done in gathering together the collection of soil products and manufactures therefrom, which are exhibited at the Centennial Exposition is almost astounding to contemplate. Now that it is done, it is not surprising that the result is open to the criticism that it might have been better arranged, or at least might have been differently arranged with advantage. If a farmer, desirous of studying the agricultural features of the show, were to exhaust himself—which he may easily do—in surveying the Agricultural building only, he would miss some of the best things to be found in the exhibition. Perhaps it is fortunate for him that it is so, because in the search for what he seeks, he will come upon many things he ought to see, and would otherwise fail to discover. For instance, we have noticed amongst other things, that a fine collection of wools from Tasmania, is in the main building, as is also a very large collection of cotton samples from Egypt. In the Kansas and Colorado building there is an excellent collection of products and specimens of natural history and geology. There is an interesting variety of specimens of ornamental and useful woods in the Ohio, W. Virginia, Indiana, Canada, and other State buildings, and so on at almost every point, one may see something of agricultural interest outside of the building specially provided for this department of industry. The Agricultural building itself is a vast show of something of everything, such as is found at the best of the State Fairs. Perhaps the most conspicuous thing to be noticed next to the implements being the industrial products of our vast corn crops in the shape of whiskey, contained in huge piles of polished barrels and transparent bottles, of immense quantities of lard in glass headed barrels, bottles, globes, and artistic shapes all of it white as snow; of a large and varied assortment of starch for both laundry and culinary purposes, and last, but not least, of pork, hams, shoulders, sides of bacon, sausages, and beef in many shapes. One gets a clear idea of the intrinsic value of this crop from the view of its various products here. In short, the exhibition is to be seen, it cannot be fairly described in any possible way.

Horticulture at the Centennial.

Fault-finding is easy, and at the great Exhibition, great and interesting beyond one's most extravagant anticipations, there is abundant room for fault-finding. We have heard it remarked that the horticultural display was poor, that there was but little there worth looking at, and we have noticed that these criticisms came from professional horticulturists, who sent nothing to the exhibition, and have taken no further interest in it than to visit it and find fault. If we compare the exhibition as it is, with what, considering the horticultural resources of the country, it might have been, we admit that it falls short. On the other hand, if we consider it as it appears to the thousands who daily look upon it, and for the first time in their lives, see rare and fine plants, it is very far from being a failure. As to the out-door portion, when we remember that this spring the grounds were untouched except to be desolated by the traffic and rubbish incidental to the erection of many vast structures, and were about as unpromising as a brick-yard, we must wonder at the industry and perseverance that has brought them to their present condition. So far as horticulture is concerned, we think that grave mistakes have been made in the organization, which has so subdivided the departments as to make it appear that horticulture comprises only ornamental gardening and the cultivation of exotics under glass. We do not understand that classification which places the strawberry and raspberry shows, and those of early vegetables, in the Department of Agriculture, and the same remarkable subdivision will place the great pomological display which it is proposed to hold in September, under the same department. We find no fault with the Department of Agriculture, but protest against the divorcement of Pomology and Horticulture. The inconsistency of this arrangement is shown in the fact that the judges of fruits thus far appointed are all prominent members of the Pennsylvania Horticultural Society, and are known as horticulturists, who in their business do not regard horticulture as confined to ornamental plants. The early fruit shows have been melancholy failures, and we trust that the fact that the proposed September show is to be held as something distinct from horticulture, will not merit the same verdict. Here is a chance for the greatest fruit show that the world has ever seen, if fruit-growers only choose to make it so. It is to be greatly regretted that the Pennsylvania Horticultural Society has determined to hold an exhibition of fruits at about the same time, and this will divert some of the exhibitors from the Centennial show. The Pennsylvania Society may have reasons satisfactory to itself for engaging in this rivalry, but fruit-growers elsewhere will regret it, and should see to it that the Centennial show does not suffer on this account. Let us have our great Centennial Exhibition of the fruits of the whole country, no matter under what department it may be held.

As to the display made under the Bureau of Horticulture, we have had time to examine only that in the Horticultural Building. This building is one of the finest structures upon the grounds, and consists of a spacious main hall, with four side halls which are built in the form of curvilinear lean-to conservatories. In the main hall are four large beds with a handsome fountain at the intersection of the walks. Here are planted out various palms, tree ferns, cycads, and other large specimens with attractive foliage, among which are intermingled interesting plants of lower stature. The general effect is pleasing, and the thousands who pass through the building are evidently gratified by it. There are a number of plants of economical importance, such as coffee, tea, banana, gamboge, and others, and the groups of people which gather about these show that the collection is both instructive and pleasing. The majority do not seem to know of the houses at the sides, where the choicer collections are placed, and these have comparatively few visitors. One of these houses is occupied by the collection of George Such, South Amboy, N. J., and well sustains his reputation as a grower of fine plants. We have not space to enumerate the plants which make this the finest of all the horticultural exhibits, but advise all the visitors to make it a point to see it for themselves.

Another fine collection is that of B. S. Williams & Co., Victoria and Paradise Nurseries, Upper Holloway, London, Eng. This contains many choice things, but the specimens coming from abroad are of course not so large as those in Mr. Such's lot. Messrs. W. & Co. have shown an enterprise in sending so far which is worthy of all praise, and when we consider that their plants were in the cases for 16 days, we may be sure that they are skillful packers as well as successful growers.

Lovers of ferns will not fail to examine those shown by S. B. Parsons & Sons, Flushing, L. I. It is a very large collection of specimens, which, though of medium size, are in the most perfect condition of health, and includes some of the most rare and beautiful of these interesting plants.

Messrs. Miller & Sievers, of San Francisco, Cal., show

some fine Cacti, excellent specimens of the new *Agave Shawii*, good tree-ferns and other plants.

John Dick, of Philadelphia, has a collection of good plants, and there are several smaller collections of which we do not remember the owners' names. Two excellent specimens of *Todæa superba*, charming filmy ferns under glass cases, are worthy of notice. One of the side houses is mainly occupied by Cacti, Euphorbias, and other stuff which may be appropriately classed as rubbish.

The florists appliances, the preserved and wax flowers and fruit, skeleton work, and other matters in various parts of the Horticultural building are worthy of inspection. We must leave a notice of the outside horticultural display until the abatement of the fierce heats allows of a more close examination.

Bee Notes for August.

BY L. C. ROOT, MOHAWK, N. Y.

As the honey yield draws to a close, which, in most sections, will be during this month, care must be taken to avoid too many partly filled boxes. Beginners are apt to continue to supply the place of full boxes with empty ones too late in the season. Instead of this, the number of boxes should be diminished, and in some cases those colonies which work in boxes most rapidly, should finish such as are partly filled by those that work less freely. Box honey that has been removed from the hives, and packed away as directed in the July notes, should be examined occasionally, and if the moth-worm is found in any, they should be either removed, or the boxes placed in a tight box, and fumigated with brimstone. Such boxes should be placed by themselves for home use, and when honey is taken from them for the table, all places disturbed by the worms can be cut away. A correspondent asks how the worms could get into his boxes, as he sealed them up tight when taken from the hive. The eggs were deposited in the boxes while on the hive, and sealing up closely aids the progress of the worm, by retaining the heat. Worms are seldom found in boxes, except such as contain bee bread.

In most sections swarms will not issue later than this month. Each swarm should be examined to ascertain if it has a laying queen. Young queens are liable to be lost when sometimes a swarm has no means of rearing another, and unless another queen is supplied, or brood from which to rear one is given, the colony will soon be worthless.

On page 254, of the July No., under the head of "Among the Farmers," your correspondent asks a plain, practical question, and justly heads his remarks, "Wasted Sweets."—"Why is it that we have no more bees?" is a question that claims the attention of every farmer. In attempting to give some of the reasons why so few bees are kept by farmers, I shall differ somewhat with your correspondent. If all who have attempted bee-keeping had been successful, the number of colonies throughout the country would be far greater than at present. The real answer to the question is, that the advance that has been made in bee-culture during the past few years, is not generally understood. The foremost reason that would be given by the inexperienced, would no doubt be *the fear of stings*. Were the present facilities for subduing bees, and the ease of ample protection properly understood, the fear of stings would become one of the least hindrances to bee-culture. Again, many farmers, as well as others, would keep a few swarms, if it were not for the idea that they must be watched during swarming time, and thus interfere with their general business. This belongs with many other absurdities of old time bee-keeping. Your correspondent speaks of the ease of preventing loss of swarms. If he means glass during winter and spring, I think he is in error. This is the knotty point of bee-keeping. Not that the loss may not be prevented in a great degree, but he should have said, with *earnest care and attention*. He suggests that it is not safe to move bees less than three miles. Many can testify to having moved them one mile, and even less, with entire satisfaction.

I am aware that in urging all to investigate the interests of bee-keeping, I expose myself to criticism. We are told by those interested in the production of honey, that in so doing we are working against our own interest. I can hardly believe their view correct, and if it were, we should hardly be justified in remaining silent, while, as your copresondent truly says, "forage for bees abounds, and acres of honey are hardly sipped." Let me urge then that the readers of these notes procure some standard work on bee-culture, and learn for themselves what, as the late M. Quinby expressed it, "they are losing, not for the asking, but for the taking." Besides it is an interesting pursuit, so much so, that if those who study it never keep a bee, it will be time well spent to learn their natural history.

Let me not be understood as conveying the idea that it is a business in which any one can be successful without persevering study and effort, and if one engages in it extensively, he will find plenty of hard work. Bee-keeping as an exclusive business, and the care of a few as amusement or for home supply, involve altogether different methods of handling and practice. While few are adapted to pursue bee-keeping on a large scale, almost any one can succeed with a few colonies.

I would here repeat the suggestion made in a former number, that questions of general interest be forwarded to me to be answered through these columns.

Strawberries—How to get a full Crop in ten Months from the time of Planting.

BY PETER HENDERSON.

Our success in the culture of Strawberries, by the system of layering the runners in pots, has been so complete the past season, that even at the risk of repeating some of the directions already given, I will briefly state how it is done. In July of 1875 we threw out every other row of the plants that had fruited, thus leaving the rows four feet apart. This space between the rows was deeply plowed three or four times, so as to thoroughly pulverize it. It was then leveled with a rake, and the runners from the old plants, as soon as they began to grow freely, led out upon it. Flower pots, 24 inches in diameter, were filled with and plunged into the soil up to the brim, and the layers or buds at the ends of the runners were placed on the earth in these pots. To keep the runners in place, we use small flat stones, which are laid upon them, and these also help to mark the places where the pots are sunk. The layers so placed on the soil of the pots are not only kept down, but are kept moist by the stone, and root rapidly. In two to four weeks from the time the operation is done, the plants are well rooted in the pots, and ready to be set out. Our plants last year were set out from the pots the first week in August, not a single plant died, and all grew freely. They were set in rows two feet apart, and 18 inches between the plants, and all the runners made were at once pinched off, so that by the end of the season each plant was nearly one foot in diameter, having finely developed "crowns" for next season's fruiting. The ground had been first prepared before planting by plowing and subsoiling to the depth of 18 inches, turning down at the same time 3 or 4 inches of well-rotted manure, from the horse or cow stable. Of course the ground was kept entirely clear of weeds. By the middle of December, the whole bed of strawberry plants was covered with salt-meadow hay; (straw, leaves, or any thing similar, will do as well), to the depth of two or three inches, entirely covering up the plants and soil so that nothing was seen but the hay. By April the plants showed indications of growth, then the hay was pushed a little aside, and by May, the full developed plant showed on the clean surface of the hay. This mulching is indispensable to the best culture, as it protects the plants from the cold in winter, keeps the fruit clean, and at the same time keeps the roots cool by shading the soil from the hot sun in June. The crop began ripening June 10th, and was at its best on June 15th; the yield was perfectly enormous. Each plant of the "Seth Boyden" variety averaged a quart, many of the berries being nearly an ounce in weight. In a trial of some 15 varieties, our choice was for the following, as presenting the best combination of qualities: "Seth Boyden," earliest and largest, and fair flavor; "Monarch of the West," late, large size, and fine flavor; "Chas. Downing," medium early, and of medium size, fine flavor. Our soil is heavy clayey loam, with a stiff subsoil. I am convinced that the most profitable way to grow strawberries, either for market or for private use, is by this system. Any handy man can place 2,000 layers in pots in a day. Each layer, in ten months, makes a plant that gives its full crop of fruit. The labor is less than by any other method, because nothing more has to be done after planting, but to keep the crop clear of weeds, and pinch off the runners for only six weeks of the year, while with beds planted in spring, in the usual way, you have nearly six months work on them, with no better plants in the fall. Besides, when ground is limited, there is plenty of time by this system to throw out the plants that have fruited in June, and plant the same ground over again in August with the young plants from pots. That is really our own practice, for the space we devote to strawberries is less than an acre. In our experiments, the past season, we found that no variety which had been left two seasons to fruit, produced so large a crop as the young plants, and the berries were hardly half the size. This system of starting plants in pots, and setting them out in August, properly carried out, will never fail to give entire satisfaction in growing strawberries.

Shelter for the Head.

Many a severe headache, and a restless night after an exhausting day's work in the harvest field, might be prevented by the use of some simple precautions. The sun beats down upon the head and neck with great force, when the thermometer marks 90 degrees and over in the shade, and the scorching effect of a heat of 120 degrees in the direct sunshine, is both uncomfortable and dangerous to the health. The head should be protected in such cases by wearing a straw hat, or one of some open material, with a broad brim, and by placing a leaf of cabbage or lettuce, or a wetted cambric handkerchief in the crown of it. The very sensitive back of the head and neck, is best protected by means of a white handkerchief fastened by one border to the hat-band, and the rest made to hang down loosely over the neck and shoulders. The neck is thus shaded from the sun's rays, and the loosely flapping handkerchief causes a constant current of air to pass around and cool the neck and head. We have found this to be a most comfortable thing to wear, and its value as a protector to the base of the brain and the spinal marrow is so well known in hot countries, that the use of a similar protection is made imperative in armies when on the march.

NECK PROTECTOR.

Ogden Farm Papers.—No. 78.

BY GEORGE E. WARING, JR.

It will be remembered that much that I had affirmed concerning the use of the deep-can system for setting milk, was controverted by several critics, notably by Mr. Eastburn Reeder, and other members of the Solebury Farmers' Club, of Pennsylvania. I had no time and no opportunity to go fully into comparative experiments, nor did I dare to take the risk of changing my system for experiment—fearing to injure the quality of the butter, and so permanently injure my business.

All I could do was to "ride a waiting race," and trust to time to adduce further evidence for or against it. Time seems to have done all that I could ask. Mr. Reeder, who had made frequent careful experiments, demonstrating in every instance a decided advantage in shallow setting, at various temperatures, was the most effectual of the opponents of the system, and when Mr. Hardin made experiments in deep setting at the Chautauqua County Dairy Exhibition, if I remember correctly, Mr. Reeder came again to the charge, and insisted that the effect was not, and could not be, under the circumstances, what its advocates had claimed for it. Now, however, since Mr. Hardin has given so much prominence to his form of the deep-can system, Mr. Reeder, who seems to be imbued with the true spirit of careful investigation, has experimented with it in comparison with shallow setting, and has reached results corresponding exactly with what I had always claimed—that is, in general terms, he found, as we did, that either shallow or deep setting, if properly carried out, will develop

all of the butter that the milk contains—leaving the question of merit to be decided according to the amount of labor required, and the uniformity of the result produced. Essentially, Hardin's system is the same as that which I have advocated, save that I produce a uniform temperature by swimming my cans in cold spring water, and he by shutting them in a refrigerator with ice. Mr. Reeder experimented with two portions of 450 lbs. of milk each. The product was, from the shallow pans, 78 lbs. of cream, and 27 lbs. of butter; from the deep cans, 128 lbs. of cream, and 27 lbs. 2¼ ozs. of butter. The extra amount of cream in the deep setting comes from the lack of evaporation, because of the small exposure of cream, and the low temperature of the surrounding air. The amount of *butter* is practically the same. Mr. Reeder explains the error of his former experiments, by saying that he had skimmed only two inches deep, "obtaining 3¼ lbs. of butter; and increasing the depth of skimming in subsequent trials, to 3, 4, and 5 inches, and obtaining as a result 4, 5, and 6 pounds of butter from 100 lbs. of milk." It had been *our* custom to remove all of the cream until we came to blue milk, without reference to the number of inches taken off. He recommends the Hardin system for general adoption, and I have no question that it has the advantages that are claimed for it. It comes within the reach of a large number of dairymen, who can obtain a sufficient supply of ice, and who are not so situated that they can procure the necessary cold water. Many of those situated as I am, where ice is an expensive luxury, and difficult to obtain in large quantities, will find my method, of pumping cold well-water by wind power, a perfectly good substitute. Indeed, I am still satisfied that the plan for a dairy, which I described with an illustration in the *American Agriculturist* some years ago, where the water is taken from the bottom of a deep cistern, pumped by wind-power into the tank, the overflow going back to be cooled in the cistern, is, in all respects as good as it is simple. Were I to construct a new dairy, where there was any question as to the constancy of my well, I should adopt this deep cistern plan with entire confidence.

The Maine Farmer, in answering an inquiry as to the best method of setting milk, gives a summary of all of the different processes, saying, "Col. Waring has aimed for the top round, and he can claim a fair degree of success, but with all his faculty for advertising his wares, he has too much good sense to claim that his method would be the best for all, or that it is beyond the point of improvement." This is essentially true, save that I have no wares to advertise, (Ogden Farm butter advertises itself), and the method I have adopted is not at all my own. It is the method of all the large creameries that have a good control of spring water, and is merely an adaptation of the Swedish system of setting milk in deep cans in ice water—the very little that I claim concerning it, is that I have been able to demonstrate its success, and that it has been my good fortune to have such a wide-reaching mouth-piece as the *American Agriculturist* in which to make its success known.

It has frequently been suggested that some means should be adopted, by which perfectly authentic tests may be made of the butter producing capacity of the much vaunted Jersey cattle, and that the well known differences existing between individuals of the breed, should be demonstrated—with absolute certainty as to the carefulness of the trial—that intending purchasers may know, not only how good a Jersey cow *may* be, but *how good the individual cow is*. Any plan that would compass these objects, would have in addition to this obvious advantage, the very great one of giving an added value to the question of pedigree. Could we know that such and such families, or such and such individuals, might be depended upon to produce a certain yield of butter—at the flush, and throughout the year—pedigrees tracing to these, would be a very good indication of value; and could the system be carried on until a certain pedigree should be confined entirely to animals of the largest production, the value that would be added to the animals having this family tree, would, of course, be very great. Still further, were such trials to inspire universal confidence, we should attain the far most important object of checking the production of inferior animals, and forcing the selection into the range of the very best—a course that would result in the greatest possible improvement of the stock of the dairy animals of the whole country.

The American Jersey Cattle Club has established a system for recording pedigrees and for disseminating information which accomplishes all that seems to be within the scope of its official action, but a project is now on foot among some of the individual members of the club to establish a breeding and cow-testing farm, where carefully conducted trials may be made and recorded. Should this project be carried out, the character of the gentlemen interested in it will be a sufficient guaranty of absolute honesty and thoroughness, and honesty and thoroughness are the two chief essentials in the conducting of all such trials. It would be the purpose of this association not only to breed on its own account a class of animals whose excellence should be based on absolute performance at the pail and churn, but to furnish facilities for private breeders in all parts of the country, who might choose to send their best cows to take their degree at its examinations. Something of this sort would be valuable under any circumstances, and it is especially necessary in view of the fact that Jersey breeders are very largely wealthy men who have a passionate fondness for, and implicit confidence in, their own herds; and who honestly believe—at least a dozen of them whom I know—that they have the very best butter producers that have ever been bred. These gentlemen are very much influenced in forming their opinions by the statements of their herdsmen, and herdsmen, as we all know, are not always reliable. Some of these consider it a slight crime to tell their employers little "whoppers," which can have no other practical effect than that of making their employers happy. Then, too, the disposition of mankind to encourage its own pleasant deception is very great. What we want, and what, I hope we are to have, is a strictly conscientious and impartial test by weight and measure of every drop of milk drawn, of all the cream raised, and of all the butter made, each cow's product being kept by itself, and a systematic record kept year after year. Some of the practical questions that would be incidentally decided by such a system are these: 1. Will a cow produce more butter within the year if she comes in in the fall than if in the spring? 2. Will a cow produce most, year after year, if fed only on grass and hay, or if fed largely with grain? 3. Is that cow the most profitable which gives the largest flow of milk, or does the extra richness of the moderate flow more than compensate for the loss of quantity, butter being the object? 4. Does the great milker, or the steady milker, produce the most milk during the whole year? 5. Does the *quantity* of cream or its *richness* have the greatest influence on the total product of butter?

A continued interest is evinced by the tone of the agricultural press in the question as to the intention of the Jersey Cattle Club to modify its rules. For the present it can only be said that a very sweeping change was proposed at the last annual meeting, and has been voted down by a large majority. At the same time the discussion of the question has shown a decided disposition to make some modifications concerning the evidence required of the purity and quality of animals imported from the Island of Jersey, and it is not unlikely that some such change will be made. On the other hand, it may be considered as tolerably settled that the club will not consent to any material relaxing of the requirements in the case of animals bred in this country. Among the older members of the club there is hardly one who has not made a serious pecuniary sacrifice in order to secure a rigid exclusion of questionable pedigree, and so far as I know, none of them are disposed now to offer to the general public any more favorable terms than those which they have themselves willingly accepted for the sake of the general good. (While on this subject, I desire to say to such of my readers as have seen the discussion I was rash enough to undertake with the *Live Stock Journal*, that I have withdrawn from that discussion, because I think I have fully answered all that its editor has said concerning the club, and because it became obvious that he—being in power—meant to have the last word at any rate).

Referring to the suggestion made in the last number of these papers, I have to say that a careful examination of the agricultural exhibit at Philadelphia, makes it seem almost impossible to give any account of it which would not be absurdly inadequate. On the one hand I found no single thing that seemed to promise a striking revolution in the processes of American farming; but on the other hand, there is a wealth of display in every department of machinery, products, fertilizers, and processes, which cannot fail to impress the farmer with the magnitude and importance of his industry. At the State Fairs, with which we are all familiar, there is always a great and interesting exhibition in all of these directions, but the Centennial has gathered together the advantages of all these State Fairs, and has added to them a good exhibit of the agriculture of almost the whole world.

It is not, after all, purely as an agricultural show that the International Exhibition appeals to the American farmer, but as a wonderful illustration of what it implies to be an inhabitant of this insignificant planet. A week spent by a farmer and his family in wandering thoughtfully through the enormous aggregation of the products of art and industry and nature, exhibited at Philadelphia, would result in a nearer approach to a liberal education than they are likely under their circumstances ever again to acquire. I have passed some time in the more important museums of Europe without finding in them all anything like the display of interesting and instructive objects that is now offered to the American people.

Science Applied to Farming.—XX

BY PROF. W. O. ATWATER.

Economy in Manuring.

In several of the previous articles we have been trying to get at some of the more important principles upon which the right use of fertilizers is based. The letters that come from many directions, the questions asked by farmers who visit our laboratory, and whom I meet elsewhere, all show how deep and wide-spread is the interest in these subjects among intelligent and thoughtful cultivators of the soil. Let me, then, offer a few more suggestions, and ask those who read them to ponder the subject well, while they are watching the growth and harvesting this season's crops.

In saying that no plant can grow and flourish without an available supply in the soil, of each of a certain list of substances needful for its food, and that the chief use of fertilizers is to supply food which plants need and soils fail to furnish, we are simply repeating now universally admitted facts. It is perfectly plain, then, that those fertilizers will be most economical, which, in one way or another, supply these lacking materials in the needed proportions, in the best forms, and at the lowest cost. We have, then, two very important problems to solve: *First*, what ingredients of plant-food do our soils lack? *Second*, by what applications of fertilizers, or other means, will this need be best supplied? To answer either of these questions fully and definitely, is very difficult; the first, because of the difference in soils; the second, because we do not know, and do find it slow work to discover definitely, the ways in which atmosphere and soils and fertilizers, supply food, and plants use it.

Table 31, in the June No., showed what materials are removed from the soil by different crops. The list included, besides water, the chemical ingredients, Nitrogen, Potash, Soda, Lime, Magnesia, Phosphoric Acid, Sulphuric Acid, and Silica. Very small quantities of Iron and Chlorine might have been included also. The amounts and proportions vary with different crops, but the list is the same for all. Every crop takes more or less of each of these materials from the soil, but are they all necessary?

As was explained and illustrated by some experiments in our *March* article, Nitrogen, Potash, Lime, Magnesia, Iron, Phosphoric Acid, and Sulphuric Acid must be furnished to crops through their roots, by the soil, in order to their growth. Each one of these is an *essential ingredient* of plant-food. If the available supply of any one be deficient, the crop cannot flourish. In how far the three other substances mentioned are essential to the support of plants is not so definitely proven. The best experimental evidence at our disposal indicates that but a very minute quantity of soda, if any, is needed by our ordinary plants, but that in some cases, at least, small amounts of chlorine are indispensable, and minute quantities of silica may be necessary to the healthy and normal perfection of the plant. In many trials made at the Experiment Stations, and elsewhere, in which oats, buckwheat, corn, and various other plants have been grown with their roots in water or in artificial soils, the plants have been raised stronger, healthier, and in every way more perfect than is ever the case, except in the rarest instances, in ordinary field practice. These results have been obtained when neither soda nor silica was supplied except the very minute portions that were contained in the original seed, or dissolved by the water from the glass of the jars in which the plants were raised. But when the supply of nitrogen, or potash, or phosphoric acid, or lime, or magnesia, or iron, was deficient, the crop failed; and, in some cases, without chlorine, they were sickly. Such are the results of a vast deal of the most careful experimenting.

What Ingredients of Plant-food are apt to be deficient in our soils?

It is sufficiently well settled, that Nitrogen, Phosphoric Acid, Potash, Sulphuric Acid, Lime, and Magnesia, are the only ingredients of plant-food which need to be supplied in fertilizers. Iron, Silica, and Chlorine, are furnished in abundance by every ordinary soil.

Generally speaking, we may accept the opinion commonly held that Magnesia may sometimes be lacking, that Sulphuric Acid and Lime are more apt to be deficient in our ordinary soils, and Nitrogen, Phosphoric Acid, and Potash, most so. In one soil one, in another, several or all of these may be wanting. Such is the general result of all the best evidence of experience and experiment which we have at our disposal.

It was once thought that the chemical analysis of a soil would easily reveal the deficiencies in plant food. But later experience has shown this is, at best, a costly and defective source of information. Different samples of soil from the same field may vary widely in composition, and, what is a still greater difficulty, the chemical tests which make known the presence of a given ingredient in the soil, do not show whether it is in such a form that the plant can use it. And there are many processes of vital importance to the sustenance of the plant which are continually going on in the soil, but which the analysis does not reveal.

In fact, in the present very defective condition of our knowledge of these subjects, the surest and best way to learn what are the needs of a given soil is by actual experiments with different fertilizers and crops, and modes of treatment.

Complete vs. Special Manures.

A friend once asked me to recommend to him a phosphate for a top dressing for his lawn. I had just analyzed a sample from a neighboring dealer, and found it very good, and told my friend so. He bought a quantity, tried it, and saw scarcely any benefit from it. The season was dry, however, and we were inclined to think that might have been the reason for the failure. Not long since a very intelligent farmer was telling about some experiments he made a few seasons ago with artificial fertilizers. He had tried small lots of a number of different brands of superphosphates and Peruvian guano also. So far as he could judge, there was but little difference in the results, nor did either of the articles prove especially beneficial. He felt certain that the fertilizers were in themselves good, and was wondering why the results were not more satisfactory. The failure could not be ascribed to drouth, for the season was not particularly dry. I am inclined to think that in this case, and perhaps in the other one, the fertilizers did not supply what the soil lacked. And right here, I believe, is to be found the cause of a good many of the failures in the use of artificial fertilizers. Most of our artificial manures are only special fertilizers. They supply part, but not all, of the list of ingredients of plant food, which may be deficient in our soils. During the past winter and spring, we have analyzed, at our Experiment Station, about a hundred samples of commercial fertilizers, such as are sold and used in Connecticut. With the exception of a small number of samples of potash salts, but very few of them furnish any considerable quantities of potash, though nearly all contain a good deal of phosphoric acid and lime, and the most of them nitrogen also. In a Report lately issued by the Station, analyses of some seventy samples are given. This list includes Phosphates, which furnish phosphoric acid and lime; Superphosphates, which contain phosphoric acid, lime, and sulphuric acid; Bone manures and "Ammoniated phosphates," which contain the ingredients mentioned, and small quantities of nitrogen in addition; Peruvian guano and fish manures, which contain a good deal of nitrogen, and more or less phosphoric acid and lime, and so on. None furnished any notable per centages of either potash or magnesia, except the Peruvian guano, which yielded small proportions of potash, the highest being about 2½ per cent, and of four Nitrogenous superphosphates, to which German Potash salts had been added in manufacturing. Two gave about four per cent of potash, the others less than two per cent of potash each. Along with the potash they contained magnesia also. Of the whole list of seventy commercial fertilizers, referred to in the Experiment Station Report, only the two last mentioned furnished notable quantities of each of the whole list of ingredients of plant-food which are apt to be lacking in our soils. These last were complete fertilizers. The others were special fertilizers.

In the last article mention was made of some experiments by Messrs. Lawes and Gilbert in England, and of Prof. Storer at Jamaica Plain, Mass. The soil on which Messrs. Lawes and Gilbert worked, gave continuously good results with manures which furnished nitrogen and phosphoric acid, and was able to supply sufficient potash of itself. But on Prof. Storer's soil, phosphates and nitrogenous fertilizers did but little good, while those that furnished potash proved most effective. —In Lawes and Gilbert's experiments, the soil supplied enough of the other essential ingredients of plant-food, so that with the addition of nitrogen and phosphoric acid, as large crops were obtained year after year, as with heavy dressings of barn-yard manure. Prof. Storer's land furnished enough of phosphoric acid and lime, and the other essential ingredients of plant-food, so that when potash was added, as large crops were obtained as with barn-yard and stable manure.

The need of potash in many New England soils is likewise indicated by the experiments of Profs. Goessmann and Stockbridge of the Massachusetts Agricultural College, the Messrs. Sturtevant in Framingham, Mass., and others. And these results are confirmed by a great deal of practical experience in the regions where these experiments have been made and elsewhere.

We have some experiments now going on in connection with our Station in which the effects of different fertilizers on a soil in this neighborhood are being tested. Of course no definite results are obtained as yet, as the crops are still young, but, so far as we can now judge, the fertilizers which contain potash are doing considerably better than those which have no potash.

In some of his field experiments, Prof. Storer obtained smaller crops of beans and barley on plots treated with bone and other phosphates, than on contiguous plots which received no manure at all. In some cases the phosphates, instead of increasing the crops, actually diminished them. The same observation has been made by experimenters in Europe. This injurious action of phosphates Prof. Storer is inclined to think would occur only on poor soils. To investigate the cause, he "tried a number of experiments in pots, with the view of determining how large an amount of phosphatic manure may be safely applied to sterile land. From the results obtained he infers that bone-dust and other phosphates, when present in too large a quantity, may exert an exceedingly hurtful influence on the plumule, or first sprout, that springs from the seed, especially at the time when the young shoot is ceasing to draw its nourishment from the seed, and is beginning to live on matters derived from the soil and air."

Now do not these facts give a very probable explanation of the reason why my friend's superphosphates and guano did so poorly? They are special fertilizers. They supply part but not all of the indispensable ingredients of plant-food. Did they fail to supply just the ones that were most needed?

Now let us look at this matter from a slightly different standpoint. Many farmers find that Peruvian guano, fish, and other special fertilizers, whose action is quick and stimulating, seem to leave their soil in a more exhausted condition than before they were applied. A good many of our Connecticut farmers complain that guano and fish "run their land down, drive out the grasses, and bring in sorrel." The same observation is made concerning bone manures and other phosphates. One of the most observing farmers in this region remarked to me a while ago, that bone does not work as well on his and his neighbors' land, as when they first began to use it.

In the Experiment Station circular above referred to is the following:

"May we not at least question whether the immediate effect of these special fertilizers has not been, in many cases, to aid the plant to use the more available stores of food in the soil, until these latter have become so far exhausted as no longer to respond to the stimulating action of the special manures?—If the above supposition be correct, it is clear that what such exhausted soils need, is something to supply, not only the nitrogen and phosphoric acid of the guano, or fish, or bone, or superphosphates, or other special fertilizers, but also the potash and other materials that these latter do not furnish.—Ashes are, for many soils, a standard fertiliser. Places where a tree or a brush-heap has been burned, often show the effects of the manuring for years. It is an old saying, that 'The land never forgets ashes.' Ashes supply directly all the soil ingredients of plant-food except nitrogen. Their indirect action is also, very likely, not unimportant in rendering other materials in the soil available. Instead of wearing out soils, they strengthen them. May not this difference be due, in part at least, to the fact that they furnish the other ingredients of plant-food which the guano and fish lack?—Stable manure furnishes all the ingredients of plant-food. It is a complete fertilizer. Farmers do not complain that it helps to exhaust their land."

In brief, these special fertilizers are useful in proportion as they supply the materials which the crops need and the soils lack in the special cases where they are used. Otherwise they cannot be profitable. And, as I have repeatedly urged, the question whether a guano, or phosphate, or bone manure, will be profitable on a given soil is best settled by experience and experiment.

Wesleyan University, Middletown, Conn.

A New Wagon Brake.

An automatic wagon brake that will act of itself, when needed, without the help of the driver, is a very desirable thing. In drawing heavy loads upon hilly roads, such a brake may prevent serious disaster, or loss of life. A brake of this kind is illustrated on the next page, where figure 1 shows the whole arrangement. The iron rods, *A, A*, fastened to the end of the tongue braces, are connected by screws and nuts, *C, C*, to cross levers, *B, B*, upon which the slotted shoes, shown at figure 2, are hung. The

Fig. 2.—SLOTTED SHOES.

bolt, which holds the tongue-braces to the hounds, works in a lengthened slot, instead of a simple round hole. When the wagon is drawn forward, the cross levers release the shoes from the wheels,

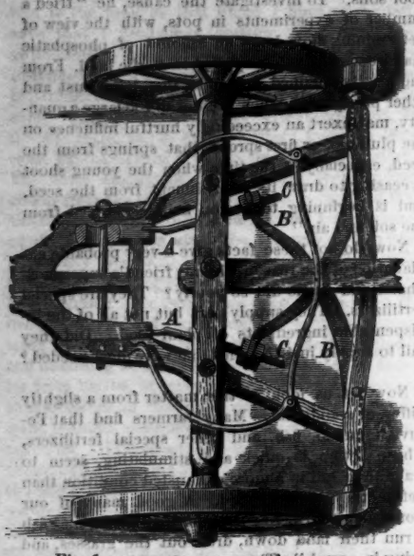


Fig. 1.—VIEW OF MARKRUD'S BRAKE.

but when the wagon presses forward, the tongue is forced back, and by the action of the cross levers holds the shoe against the tire. The friction turns the shoe so that the curved end locks against the wheel. When the back-pressure of the tongue is released, the shoe falls into its former position again of its own motion. The inventor of this useful brake is H. Markrud, of Ettrick, Wis.

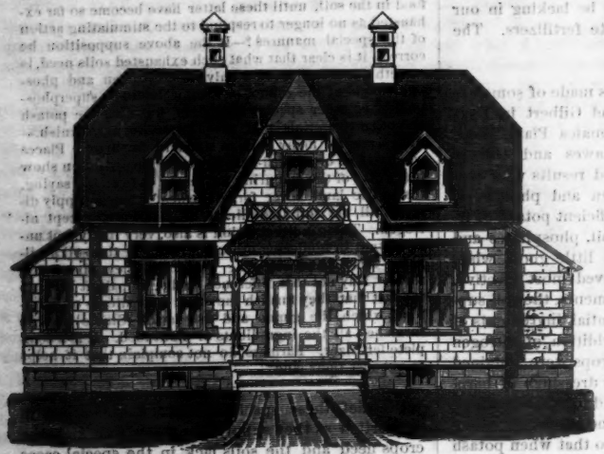


Fig. 1.—FRONT VIEW OF HOUSE.

A Stone House Costing $2,500.

BY S. H. GUILD, ARCHITECT, CORONA, LONG ISLAND, N. Y.

This plan has many features to commend it as an economical country house. It is similar in many respects to the one given last month, having an equal breadth of front, and is constructed of like substantial materials. The arrangement of the several parts, however, are more regular and compact, and embrace accommodations for a good sized family....**Exterior,** (fig. 1.)—At first sight the reader will perceive the perfect balance apparent in the outlines and details of the front. Variety is also an especial feature, resulting from the pleasing diversity and systematic distribution of the prominent parts. The site has much effect upon the appearance of any building. This house should have a commanding position to afford such views as would seem to be expected from its broad and generous windows. Health and happiness being largely dependent on the situation—it is important to select a position having a natural drainage, and therefore more likely to be surrounded with pure wholesome air....**Cellar,** (fig. 2.)—Hight 6½ feet. The plain engraving saves the need of further explanation. The ceiling is smoothly "laid off" with one coat of plaster, and the walls are flush pointed, so that the whole interior may be whitewashed whenever it shall be desirable to lighten or sweeten the cellar....**First Story,** (fig. 3.)—As is suggested by the exterior, system and order are prominent features in the interior arrangement. The main Entrance is through double doors. The principal Hall is central and roomy, and contains the open and ballustered stairway to the second story. The two principal rooms are of equal size, with outlooks front and rear. The Parlor has a pleasant bay or plant window, arranged to be shut off, when desirable, by large sash doors.—This window has no floor, but is cemented around its sides below the floor-line, to secure dryness to the walls, and is filled with earth wherein plants may be grown. The thick solid masonry surrounding this bed will secure it from frost. The temperature required to make the parlor comfortable will be sufficient for the plants—while the strong sun-light will insure their vigorous growth. A mirror may be placed on the mantel opposite this window, arranged to reflect its contents, and make a most cheerful picture.—The Living-room is a convenient apartment, in easy communication with the front and rear entrances, the wood-house, and the cellar-stairs, passing down under the front hall stairs. It has a large pantry, and is provided with a range, sink, stationary wash-tubs, water, and waste-pipes. The importance of having cold and hot water always ready should not be overlooked. Very much of the drudgery of housework in the country, consists in drawing and carrying water, and besides, it generally happens that when water is most wanted, the vessels are empty, necessitating great inconvenience and frequent distress.—The Bed-room is situated between the parlor and living-room, and communicates with both, and has a good sized closet. This apartment may be used as a sewing-room, where such work need not be put away every time it is laid down for a moment. The Wood-house at the rear is constructed of light materials, and serves as a fuel and utensil room....**Second Story,** (fig. 4.)—This story is divided into five chambers, a hall, and seven closets. Each room is entered directly from the hall, obviating the too frequent necessity of passing through one room to reach another. Closets are a necessity in any well ordered household; their uses are so numerous that it is hardly possible to provide too many....**Remarks on Construction.**—The element of durability is an important quality of this structure, avoiding the necessity and expense of frequent repairs. The exterior walls are

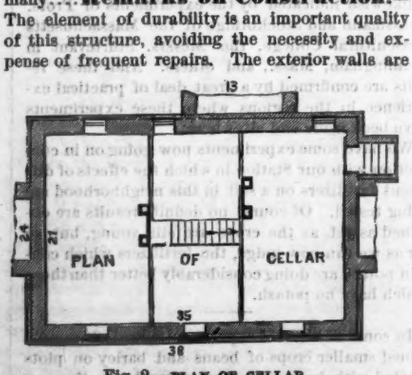


Fig. 2.—PLAN OF CELLAR.

constructed of stone and brick as described in the last *American Agriculturist.* Care should be taken to make these walls perfectly solid and thorough. The mortar used should be of the best lime, and coarse sharp sand. Such mortar improves with age, but produces greater hardness and strength.

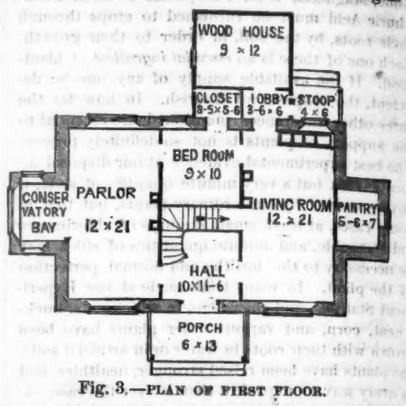


Fig. 3.—PLAN OF FIRST FLOOR.

The brick corner work may be laid in dark or blue mortar with good effect in subduing the strong contrasts in color. Interior plastering should never be applied directly to the stone-work. Such walls do not readily conform to the sudden changes of the surrounding temperature, and are rendered damp and unwholesome from the moisture of the air being condensed upon them. They should be furred off, leaving an air-space between the stone-work and plastering, through the whole hight of the wall, and opening into the spaces between the rafters of the roof. Side walls constructed in this manner afford a most comfortable interior, having a more equal temperature than is possible in the usual frame building, and neither the severe cold of winter nor the extreme heat of summer is immediately felt within. The chimneys are of hard brick; their interior location insures a great saving of fuel, as the heat that is radiated from them greatly assists in warming the house. The principal roofs are covered with dark slate. "Keystone" and "Chapman" are good qualities and are mostly used in this vicinity; they have good color and do not fade. A good effect is produced by clipping the exposed corners of about one-third of the slate in a uniform manner, and laying them in belts of five or six courses each across the roof:

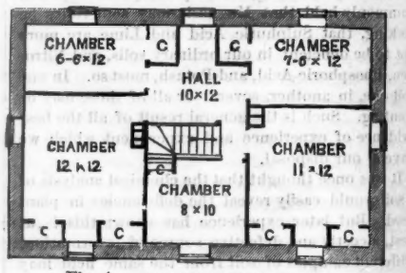


Fig. 4.—PLAN OF SECOND FLOOR.

Estimate of the Cost:

111 yards Excavation, @ 20c. per yard	$ 22.20
151 perches Stone Work, @ $2.75 ₱ perch	470.25
103 feet Stone Sills and Steps, @ 30. per foot	30.90
2,000 Bricks in angles, etc., @ $12 ₱ 1,000, laid	24.00
4,000 Bricks in chimneys @ $12 ₱ 1000, laid	48.00
660 yards Plastering, @ 35c. per yard	231.00
80 yards Plastering in ceiling of cellar, @20c. ₱ yard	16.40
3,367 feet Timber, @ 2c. per ft.	67.34
viz. 2 Girders, 4x8 in. x 32 ft. long. 41 Beams, 3x8 in. x13 ft. l'g.	
4 Plates, 4x8 in. x 11 ft. long. 22 Beams, 3x8in. x 11 ft. l'g	
2 Purlins, 4x8 in. x 38ft. long. 40 Rafters, 2x5 in. x19 ft. lg.	
1 Ridge, 2x8 in. x29 ft. long. 4 Valleys, 3x7in. x 21 ft. l'g.	
1 Ridge, 2x6 in. x 22 ft. long. 18 Collars, 1½x5 in. 14ft. l'g	
230 Wall Strips, @ 13c. each	29.90
180 Furring Strips, @ 6c. each	7.80
Anchors (of tire iron) $3; Cornice materials, $30	33.00
300 Shingling Lath, @ 6c. each	18.00
Rear Wing, (exclusive of tin) complete	160.00
20 squares of Slate, @ $9 ₱ square	180.00
32 Hemlock Boards, @ 16c. each	5.12
3½ squares of Tin, @ $8 ₱ square	28.00
60 feet of leaders and gutters, @ 10c. ₱ foot	6.00
213 Flooring, 8 inch, @ 25c. each	53.25
Stairs, complete	70.00
Piazza and Stoop, (exclusive of tin) complete	80.00
6 Cellar Windows, complete, @ $5 each	30.00
17 plain Windows, complete, @ $10 each	170.00
4 Dormer Windows, complete, @ $18 each	72.00
27 Doors, complete, @ $9 each	243.00
4 Mantels, 2 marble and 2 wooden, complete	62.00
Closet finish, complete	18.00
Range and Plumbing, complete	150.00
Nails, $14; Painting, $60; Cartage, $15	89.00
Carpenter's labor not included above	125.00
Incidentals	19.84
Total Cost, complete	$2,500.00

A Pair of Young Moose.

There is considerable confusion among the common names given to the larger members of the deer family. Our Moose, (a name derived from the Indians), is so near the European Elk, that some naturalists have considered the two as the same animal, differing only in such points as may be due to food and climate, but naturalists at present regard them as distinct. Then the animal that is called the Elk in this country, or the Wapiti, is quite different from the European Elk, but belongs to the same genus with the common deer. It has been proposed to call our Moose the American Elk, and to give the animal generally known as Elk, the name of American Stag, but it is impossible to change common names, after they have become well established, and the animal in question, however naturalists may class it, will continue to be a Moose and not an Elk, so long as it exists. Our readers are no doubt familiar with the appearance of the full-grown Moose, at least from engravings, and not a few of those living on our northern borders have seen the animal itself in a wild state. Like other members of the deer family, it is annually growing more scarce, and its range, so far as our territory is concerned, becomes more and more narrowed to a strip along the northern part of the New England States—and westward to Oregon. Their southern limit is about 40° 30', and they are found northward to the frozen regions. The Moose excels all living animals of the deer family in size and strength; it is as large as an ordinary horse, and weighs from 800 to 1,200 lbs. The animal is remarkable for the size and shape of its horns; when four years old, the horns become palmated, i. e., with a broad, flat expansion, like the palm of the hand, to which are attached points corresponding to fingers. The full grown horns measure six feet across, with a palm a foot wide, to which are attached points or prongs up to the number of 20 or more, the whole weighing from 50 to 70 lbs.—an immense mass of bony matter to be secreted and shed every year, and in marked contrast with the size of those of an animal one year old, in which they are but an inch in length. The Moose is a formidable animal at the breeding season; the males fight among themselves, and the hunter is at this season very apt to become the hunted, and obliged to flee for his life. Though hunted at other times, the Moose is most successfully shot in winter, as the small feet of the animal break through the snow and it moves slowly, while the hunter upon snow shoes can readily outstrip it. The disproportionately large head of the animal, with its long, enlarged upper lip, give it an appearance which caused Audubon to remark: "The head forcibly reminds us of that of an enormous jackass." This asinine appearance is still more striking in the young animals, as may be seen in the portraits of a pair added this year to the London Zoological Gardens, and here reproduced from "The Field." There can hardly be any animal so ungainly, or more like a slouching young donkey than a young moose. The flesh of the old moose is coarse and dry, but the young animals are sought after by hunters on account of the superior quality of their flesh; the mouffle, as the nose is called, is regarded as a great delicacy, as is also the tongue.

PORTRAITS OF A PAIR OF YOUNG MOOSE AT THE ROYAL ZOOLOGICAL GARDENS.—*Drawn and Engraved for the American Agriculturist.*

Among the Farmers.—No. 7.

BY ONE OF THEM.

Business called me into Westchester County, N. Y., a few days ago, and I visited a farm whereon a racing stud has been kept for many years. It lies very near to the East River, just where it joins Long Island Sound. The soil is good alluvial, lying upon a granitic basis, neither light nor heavy, but a friable, easily tilled loam, packing somewhat if worked in wet weather. I was struck with the excellence of the

Pastures.

and was pleased with the common-sense views of the proprietor concerning them. It would be hard to induce him to plow up an old pasture, though the ground is level and well drained, and would make capital corn or hay ground. "A good pasture," said he, "once well established, is worth everything to a breeder, especially of horses, and must never be touched, except to take out weeds and to top-dress."—He is quite right, like a permanent meadow, or New England "mowing lot," an old pasture, if the feed be abundant and of good quality, is invaluable. Having been years in growing to a state approaching perfection, if disturbed, it might be equally long in being restored. They have a proverb in England, which I have before quoted, for it contains a rare kernel of truth under a heap of exaggeration. It is this—"It takes three generations to make a gentleman, but three hundred years to make a lawn." There are, to be sure, a few lawns in England whereon the sward may be supposed to be three hundred years old, but it

would be hard to prove that the surface had not been plowed within that period. It is indeed much easier to establish a lawn or permanent meadow land in England than here, for grass is the natural product of the land much more than with us, for there the climate is moist and grass grows the year round, much as it does with us in May. If it be true there that a well established natural sward is difficult to replace or renew after it is once disturbed, it is ten times true here, where our hot summers burn the grass, the frosts of winter heave it, and our tremendous rains wash it out. The grass of these Westchester Co. pastures was unusually free from weeds. I observed June Grass, Door-yard Grass (*Poa annua*), Flat-stalked Meadow Grass, Red-top, Sweet Vernal Grass, and White Clover, in abundance. In order not to introduce the seeds of weeds, the pastures are never dressed with stable or yard manure, but artificial fertilizers are used exclusively.

It is a matter of vital importance that the young horses should have the constituents of bone in their food, otherwise they will lack vigor and strength of limb. That the grass may not be wanting in these essential ingredients, these pastures are frequently, if not always annually, dressed with ashes, bone-dust, or superphosphate of lime, alternately. This separate application is found to be better than to put them on mixed.

Breeding Stables.

The arrangement of the breeding stables and paddocks is made with exclusive reference to the health of the mares, and the full, free, natural development of the foals. Those things which we farmers are likely to keep constantly in mind, as the saving of labor, preserving of the manure, etc., seem to be absolutely ignored in solicitude for the perfection of the health and growth of the young horses. There are groups of moderate, but various sized pasture lots, and at the angle where the corners of four of these paddocks meet the stables are placed, each stable or little barn, being in the form of a T, and in each division of the T a stable, having doors and windows opening to the south, and windows to the east and west, so that the sun may freely enter. The doors open into paddocks, so that the mares and foals may freely pass and repass. There is storage room for several tons of hay and straw in the loft, and a store-room for grain on the north side. The fine old thoroughbred mares looked as if they were enjoying their old age. Dowager queens, no longer reigning favorites, or favored and petted debutantes, but in the midst of their greatest usefulness.

My friends mourned but over one thing, and that is, that the colts had not great pastures of several hundred acres each to run over, as their dams, some of them, enjoyed in Maryland and Virginia. A yearling can stretch his legs pretty well in a ten or twenty acre lot, according to my notion, and certainly they will do it if there be four or five together. The stables are abundantly lighted, the windows being numerous, large and high, so that they are very warm and comfortable in winter. I should have said that there are two stables in what represents the upright portion of the T, and usually one in each wing, with the store-room in the rear between them. The foaling stables are at the main barn, near the house. They are not peculiar except that they are peculiarly good. The mangers, water-troughs, and hay racks are elevated rather high, having the entire floor free. As soon as the foal is strong enough, and begins to feel a little independent, he is placed with his dam in one of the outside stables, where they pretty much take care of themselves.

The system upon which these thoroughbreds are reared, appears to be to give them all the liberty they can have, and to have all arrangements as nearly like nature as possible. The breeding mares are rarely worked in any way, many of them never either saddled or harnessed now-a-days. For the full, symmetrical, and vigorous development of the young animals, a profusion of the very best food is essential, and there seems to be no stinting of oats. It is wonderful how well this grain is adapted to horses. There is no substitute for it. Other grains can hardly be fed alone, certainly not in any such quantities as we feed oats. The hulls are by no means unimportant in aiding digestion, and really give the grain its peculiar value.

When horses are bred for speed chiefly, some such arrangements as I have described seem advisable, but in breeding agricultural horses, they could not be carried out with profit.

Breeding Draft Horses.

Regular labor, never excessive, nor interfering with systematic feeding, gives health and vigor to the mares, so that they may have a foal every year, and the farmer lose only a few weeks work. The foals, if well fed, and moderately pushed by feeding crushed or ground oats, with perhaps a little corn-meal, or oats and corn ground together, the oats being largely in excess of the corn, will make rapid growth, and be available for light labor at two to two-and-a-half years old. This is particularly true of French horses. At this early age many are sold, particularly colts, and worked for a year or two chiefly upon "truck" farms, and beet-sugar farms, or where there is a great deal of light work, and where few or no horses are bred. Meanwhile, being fed very well and gently handled, chiefly by women, they develop enormous frames and excellent dispositions, and as soon as they become too heavy for the work needed of them, and at the same time marketable, they are turned off at a large advance above their cost, and, having paid their way by their labor, they are thus the source of a handsome profit at a period of life when other classes of horses are only a care and expense.

I have had my doubts whether a similar course of treatment would answer well for half-bred Normans and Percherons in this country, but within a few days any doubts I may have had, have been set at rest by examining a lot of half-bred Percherons, belonging to Mr. W. S. Taylor, of Burlington, N. J., among them a noble two-year-old, of which Mr. Taylor said, he was better able to do heavy labor than his dam—a medium sized mare, which very likely was a stylish carriage horse in her palmy days.

It seems as if this fact, that draught horses are of no expense to their breeders after they are two years old, if they may not be profitably sold at that age, settles almost the question, "which is the most profitable class of horses to raise?"

Trotting Horses.

In going about among the breeders of trotting horses, I find a universal feeling that the business has been overdone, and yet it is passing strange that so little has been accomplished. We cannot breed a trotter—or a "stepper" as the phrase is—to a certainty, or hardly to a probability. Certain crosses, such as American Star or Eclipse mares, with Hambletonian horses, are almost sure to turn out well, but there is no certainty that the progeny will ever trot the mile even in 3 minutes, which, to be sure, is fast enough for any reasonable use. Yet I mention extreme cases. If such crosses can not be depended upon for anything but to produce a reasonably speedy progeny, what shall be said for the flood of trotting blood of less and less repute, which surrounds us, and gives in most cases for several years after the foaling of a colt, a fictitious value to him? The fact that a sire or dam, or some near-a-kin nag has trotted "low down in the twenties," gives rise to great expectations. These are encouraged by trainers and others, especially the former, who have simply practical knowledge of how "to get the speed out of a horse if it is in him," and who, of course, have an eye to business, and would like the animal in question at their stables for six months to train. A good trainer's services are exceedingly well paid, and while I would not say that they are not a reputable and useful class of men, yet no one will dispute the fact that immense sums of money are thrown away, through them, upon horses of only average merit.

Where do the Fast Trotters Come From?

Are they *bred*, or do they come by chance? So far as I know they are very seldom bred with any definite view to especial speed. No doubt our breeders are improving, and we are doing something in a loose way towards establishing a breed of fast trotters, but it is far from established. We have bred *for* trotters a good many years now, and yet how far are we from having a breed like

The Orloffs of Russia.

A recent traveler describes them as driven in shafts, often between two running mates, at the top of their speed, for miles, and rarely or never breaking their square quick-trot. Thoroughbred horses, English hunters or Arabians, are used for their mates, and we can judge very well that there must be a speed obtained which would be judged respectable even on our fashionable trotting courses. This breed is the result of the discreet breeding of a single man, Count Orloff. It has the reputation of being composed of a large supply of the best Oriental (chiefly Arabian) blood, mingled with that of some English, and more of the best trotting stock of Europe, (Russia, Germany, and Denmark).

It seems probable that we shall not see American trotters established as a uniform breed, until some one, or some company of breeders, systematically *diffuse* (not cross) thoroughbred blood of some sort, either English or Arabian, through that of a well selected group of mares of our most famous trotting families. It is a work of years, and fixed results would hardly be expected before the third or fourth generation.

I have been led without thinking into this discursion of the subject of breeding trotters, when I intended merely to contrast the breeding of draft-horses with that of trotters, and to impress the fact that the trotting horse is generally a heavy bill of expense to his breeder, and a disappointment when sold, while first-class draft and express horses, and stylish carriage horses may be bred with a certainty of reward, which is always the highest satisfaction to the breeder.

Orloff Carriage Horses.

I may here mention an interesting fact which came recently under my observation while abroad, and that is, that the Russians are using the established breed of Count Orloff to develop sub-races or branches of the breed. Among these is the Orloff carriage horse. These which I saw were superb 15¾-hand stallions, coal black, light limbed, upheaded, level, and powerfully muscled, with high, stylish action, and reputed to be very honest trotters. What a boon it would be to this country to have such a breed.

The Apple Crop.

Throughout a large portion of the Eastern States the apple is regarded as one of the most uncertain crops. Some years we have next to none, others give us an abundance. Now and then comes a year of full bloom, and when fairly set, a cold rain checks the development and a "thinning" of the fruit takes place which leaves very few to take the brunt of insect attacks, and for ripening. This is a casualty which may be guarded against in two or three ways, and thus we may essentially improve our prospects for fruit. Squire A., whose farm is much like mine, gravelly, light, with a western slope, and well watered, is famous for his apples, we can get them there when others have none. He uses lime—gas lime—spread in winter and applied irregularly, perhaps once in three or four years. Col. M. may be called a green farmer, he has a small orchard of winter apples, chiefly Rhode Island Greenings and Newtown Pippins. The land was used for a strawberry "patch" before he bought it, and though the trees shaded the ground a good deal, still the strawberries, ripening as they did in the shade, were a little late, beautifully scarlet, and firm, so sold well, and on the whole, though the beds were really run out, paid pretty well. He, almost sacrilegiously, plowed up the old gravelly and sandy hill-side, and raised a crop of corn, manuring the ground well. The corn was followed with potatoes, and each year he had a full crop of apples, an unusual thing for Greening or Newtown Pippin trees. He found that apples paid better than strawberries, at any rate, and very nearly as well as corn or potatoes. The third year came. I had no idea he would get a crop the third year running, but he was enthusiastic, and asked advice of his neighbors. The trees had grown pretty wide, made a good many suckers, and the lower limbs were in the way of cultivation. We cannot let an

orchard have the land to itself, but must follow the regular rotation of corn, potatoes, oats, clover, and timothy, varied according to circumstances. I recommended a severe "cleaning out," pruning not only superfluous limbs, but the lower ones, and thinning out the tops. As a result, he got a good crop again. This was last year. Now (June), they are well set for another crop. The land has been moderately limed, and planted with potatoes manured in the hill lightly. We have had good weather, so it is quite likely that the fruit will hold on, especially as the blooming was not profuse, so there are not many more apples set than should ripen.

This bit of experience illustrates several easily available ways of making this important crop much more reliable and regular than it usually is in this part of the State. 1st. Tillage and manuring. 2nd. Pruning. 3rd. Liming, or perhaps applying ashes—wood ashes are not equal to lime, or a substitute for it, but often produce similar and excellent effects. The Colonel's experiments have left the insect question altogether unnoticed. In such a year as the present, these pests will be very likely to "show their hand," and may beat him, for they play a strong game sometimes. There has been such a full set of fruit for two years, that with the small number of apples now upon the trees, the work of the codling moth may be particularly apparent, and so a very incomplete development of fruit may take place. When there is a large set there are apples enough for the worms and for a crop too, but not so when there are few. That is one difficulty that the trees which bear every year must contend against. The insects breed beneath them and in them, and they maintain a constant supply, while the alternate year trees, those which give a crop only once in three or four years, are likely to be comparatively free, when they do bear, from this annoyance.

Orchard Grass.

Writing of orchards makes me think of a recent entry in my memorandum book, "Orchard grass in full blossom June 5th." I have no record of other years, but think it is several days late this year. It usually blossoms just in advance of or nearly simultaneously with red clover. I like it better and better every year for home consumption. It is not so good to sell, and every farmer should have a field or two of orchard grass and clover to begin haying with. It enables him to begin two weeks earlier than if he waited for timothy to be fit to cut, when clover and timothy are sown together. The hay made thus early, is green and beautiful, fragrant and cures easily, for the grass is stiff enough to keep the mass, even when in cocks, light and open, so that there is little danger of heating as when there is much fine grass, such as red top, etc.

Tim Bunker on Hard Times and Central Park.

A CONFIDENTIAL LETTER TO THE EDITOR.

MR. EDITOR: You will recollect just afore the war, that Sally Bunker and I went down to Central Park, when Fred Olmstead was in his glory, turning things topsy-turvey, making dry land out of swamps, and turning dry land into pond holes, and setting things to rights, according to his notion. Well, you see, Sally has not been there from that day until this, which has just passed. We got home from the city to-day, after a week's absence, visiting Mr. Slocum's folks, and seeing the sights. You see, here three or four years ago some Hookertown people who lived in the city, took it into their heads to give Josiah a call to their church, and he was fool enough to leave Shadtown and go down there to live. I told him he missed it at the time. But he complained of the small salary, and the narrow field of labor, and went off to the city, where I guess the times have been about as hard as they ever were in Shadtown. I should not wonder if he had been homesick for the Shadtown parsonage and the garden a good many times since. I know his wife has, and little Tim and the rest of the children. There is quite a flock of 'em now, and it was when the seventh son had come to town, and Mrs. Slocum was getting about, that she wrote to her mother to make her a visit. It is rather hard times up here, and has been for the last two or three years. The panic seems to last an uncommon while. People who have got money are afraid to do anything with it. They do not want to buy property now, for they expect it will be cheaper next month. Everybody seems to be living from hand to mouth. Manufacturers have failed, and the factories are idle. Some of them have burned down, and folks say they are cases of spontaneous combustion. They do not build ships in Shadtown as they used to. They only have a few smacks and fishing boats on the stocks now, and the ship-yards look awful lonesome. The foundry only runs half the time. Some of the lawyers have died, and the doctors have moved out of town, and where they have gone to nobody seems to know. Jake Frink who has never been able to make the two ends of the year meet, says he must reduce expenses or things will go to smash at his house. Seth Twiggs has been trying to leave off tobacco, and after a hard struggle has compromised on smoking ten pipes where he used to have twenty. The wretch has bought a bigger pipe since, I have noticed, which is a good deal the style of political reform in our days.

Things did not look cheerful out here, and Sally said she guessed she would go down and see the grandchildren. Of course we had to go up and see the Park. Josiah keeps a horse and carriage. He used to do that when he preached in Shadtown on a salary of twelve hundred a year. As he cut the hay and oats on his own land, and did the foddering himself, and worked the horse enough on his land to pay for his keeping, his rides did not cost him much. And the Shadtown air was just as good for his wife and children as the air of Central Park, for aught I can see. After we got started in that great current of horses and carriages that sweeps up Fifth Avenue every afternoon, I says to Josiah.

"Now be honest, and tell us just what it costs a year to keep that animal."

"About a thousand dollars," said he, "reckoning everything. You see the horse cost eight hundred dollars to begin with, and you have to reckon the interest of the money and the depreciation of property and the risk of lameness and sudden death. Then stable room is expensive, and you have to keep a man to take care of him and the carriage, and to drive out the folks when you do not want to go yourself. And if you contract at the livery stable for the free use of a team as often as wanted, it will cost you about double, say two hundred dollars a month."

"Is it possible!" said I. "I see that city ministers need large salaries, and a good bank account beside."

Here Mrs. Bunker lifted her gold bowed spectacles that Josiah gave her, and wanted to know if we had got into a funeral procession. She said she thought the Mayor must be dead, or some other great man, as she never saw so many carriages in line before in her life. Mrs. Slocum had to tell her the same line of carriages was out every afternoon, and that the dead and the mourners went out to Woodlawn by steam cars.

"That is just awful," said Mrs. Bunker, "hurrying folks into their graves by steam! I don't want to live here."

Just then we passed a carriage with two clerical-looking gentlemen, with black suits, white chokers, and silk hats, upon the driver's seat.

"Now, Josiah," said Mrs. Bunker solemnly, who was prepared to believe almost anything of city habits, "I want to know if it is the fashion down here for rich people to keep retired ministers to drive them out to the park?"

"Not exactly, mother," said Josiah. "People who have not much dignity of their own, dress up their coachmen and footmen in ministers' clothes, and make a 'fair show in the flesh.'"

"What a shame," exclaimed Mrs. Bunker. "I thought you had a law agin forgery and wearing masks."

I was astonished to see the constant succession of carriages and fine horses from Madison Square clear to the Park, and into it as far as we rode, which was pretty much all over. There was a row of horses and carriages about ten miles long, and I got to speculating upon the cost of keeping these animals and supporting the show of which these establishments are only a small part. We came across a policeman dressed in gray uniform, who seemed to be paying strict attention to his own business, for he did not notice the people much.

"How many visitors do you have here in a day?" I asked.

"Over a hundred thousand in the best of the season," said he.

"And how many of them come in carriages and on horseback?"

"Over one-half. We have had twenty-five hundred on horseback, and fifty-three thousand in carriages in one day."

Now, Mr. Editor, it seems to me that we have got some facts here that are better worth looking at than any of Fred Olmstead's handiwork in the Park. I admit it is all very fine, the avenues, the horse tracks, the rambles, the lakes, the trees, the flowers, and especially the Southdown sheep that we saw in the pasture. It is about as handsome as the White Oaks, and when the trees get grown, it may come up to Yawgogne Clove in Shadtown. But the question is, whether we can have all these fine things and be honest. You see, of all these people who come out here in carriages, they do not average two folks to a horse. A good many drive out single. Some are selfish old bachelors or lonesome widows with two horses for one passenger. I guess 30,000 horses is a safe calculation for the horses that come out here on a pleasant day, and according to Josiah's calculation, the cost of keeping is three millions a year. But there are not more than half the fancy horses in the city out here on any one day. Sixty thousand horses at least at an expense of six million dollars, is what New York City pays for rides in a year. Then this extravagant display of horseflesh is only a small item in the family expenses. One thousand a year for a horse indicates ten thousand on an average for other things, theatres, balls, excursions, dress, rents, liquors, cigars, to say nothing of the necessaries of life. If only fifty thousand families are living in this way, it costs five hundred millions a year, or about a quarter enough to pay the national debt. And this kind of extravagance is going on all over the country, in the small towns and villages, as well as in the city, every family trying to live a little faster than the family across the street, whether it can be afforded or not. Is it any wonder we have panics, failures, and general depression of business? I take it, Mr. Editor, that the country has got to be run on the same principles as I run my farm up here in Hookertown. I am doing a good business, and can keep enlarging, with more drains, more subsoiling, and more stock, just as long as I can pay expenses, and save something at the end of every year. But if I invest in a thousand dollar horse and carriage, and keep a man to drive it, and turn my best meadow into a lawn and flower-garden, and keep a man to take care of it, and borrow money every year to keep up this style of living, I guess there would be a panic in Hookertown right off. I should lose my office of Justice of the Peace, and Jake Frink would turn up his nose at me.

Hookertown, Ct., May 25th, 1876. Yours to command, TIMOTHY BUNKER, Esq.

An Artificial Mother for Chickens.

The whole difficulty in rearing chickens, artificially, consists in the necessity for some adequate provision for keeping them warm, and an effective substitute for the brooding of the hen. For twenty-four hours after it has emerged from the egg-shell, the chick derives its nutriment from the remains of that which has been supplied to it during incubation, and needs no food; warmth and rest being all that it requires. If this warmth is not supplied, the chick perishes before it is ready for the reception of food. The greatest care then, of the artificial producer of chickens is, to provide a substitute for the brooding of the hen both during the period

when the chicks are incapable of caring for themselves, and that when they only need shelter at night and during cold spells. Various devices have been proposed for this purpose, but the majority have failed for want of perfect adaptation to the helplessness and weakness of the chicks. In some the chicks have become entangled in the woolly covering, and have died in the efforts to extricate themselves; in others the impossibility of keeping them free from filth and vermin have caused their failure, and in others the heating process has been ineffective or irregular. An artificial "mother" that would meet all the requirements of the chicks,

Fig. 1.—FIRST MOTHER.

Fig. 2.—COMPLETE MOTHER WITH RUNWAY.

that would be cleanly in use, easy to take apart for cleaning, and that would give ample liberty and safety of movement to the chicks, has long been sought by poultry fanciers. A mother which is said to meet these necessities of the case is used by a correspondent of "The Country" (Eng.), and is described in that journal with the illustrations here given. It is intended to be used not only in conjunction with an artificial incubator, but also as a protector for chickens hatched in the usual way, and which may be transferred to it instead of being brooded by the hen, the hen being discharged from this duty and set to laying again. For this purpose it has been employed in England by those who raise poultry for the market, with much success. The apparatus consists of the "first mother," shown at figure 1. This is a wooden frame about 12 x 16 inches, covered with a piece of canvass, which has

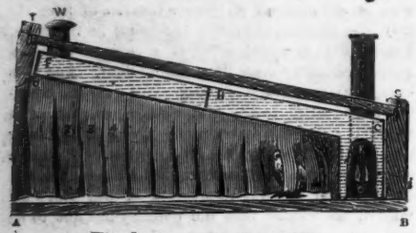


Fig. 3.—SECTION OF MOTHER.

strips of flannel sewn to it by one of their edges. These strips are about three-quarters of an inch apart, and after having been sewn to the canvass, are cut through with a pair of scissors in such a manner that they hang down loosely near to the ground, and permit the chicks to pass amongst them with ease and safety from entanglement. This is probably as near an approach to the feathers of the brooding hen as may be made. At one end of the box the cover reaches to within two inches of the ground, and at the other end to within four inches. The covering and the flannel strips can be removed from the frame and scalded and washed when necessary. Dry earth or sand is scattered beneath the frame to a depth of half an inch, and is frequently renewed. The needed warmth may be supplied either by means of an india-rubber bag or two or three quart bottles filled with hot water and laid upon the cover. A piece of flannel or blanket, thickly folded, may be laid upon the water bag or bottles to retain the heat for several hours. The chicks nestling closely beneath the flannel strips, will maintain their heat during a whole night when thus protected. For the protection of very early chickens, or of those hatched in the fall or winter, this "mother" would be better than the hen herself, as she is apt to lead her brood forth from shelter regardless of the weather, or if confined, to trample them to death in her efforts to escape. Chicks thus protected may be safely taken from the nest as soon as hatched. They may be fed at first with chopped hard boiled egg or stale bread crumb soaked in water (but never in milk until they are older). If needed, a runway of wire netting as shown at *G, H, I, K*, figure 2, may be attached to the mother by a hook seen at *F*. When a large number of chicks are reared, this "first mother" will be used only as a temporary one, and as the chicks acquire strength, and become used to feeding and finding shelter, they are removed to the final mother, figure 2. This is three feet long and 16 inches wide, holds 50 chicks at once, and will serve for 120 chicks or more through a season of several weeks. The warming apparatus in this is a metal tank (*F, G*, fig. 3), which is made to divide at the lower part, *K*, to receive the lamp, *i*. There is a division in this tank at *H*, by which a current is established from the warmer point near the lamp to the cooler point furthest from it. This is shown by the arrows seen in figure 4. There are two chimneys for the escape of the superfluous heat from the lamp, seen at *A, B*, figure 2, in which is also shown the lamp, *E*, with the long pipe which supplies the burner, and which enables the heat to be applied either to one end or to the center of the tank—one chimney being closed—when cooler or warmer weather makes it desirable to increase or lower the heat of the mother. The tube *W*, figure 3, is used to fill the tank or to test the

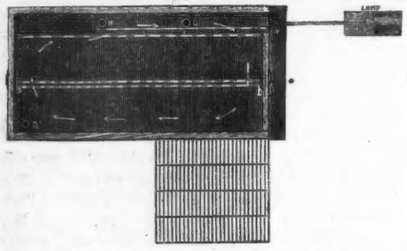
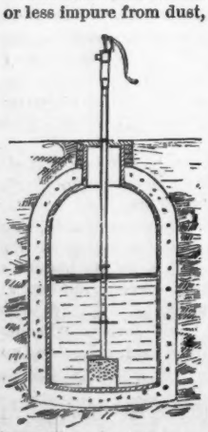


Fig. 4.—TOP VIEW OF FIGURE 2.

temperature of the water. The frame of the mother is shown at *A, B, S, T*, figure 3; at *S* and *T* are cleats which hold in place the cover of the frame, which is lined with felt to retain the heat. The strips of flannel (1, 2, 3, 4), are sewn to a canvass-covered frame which is movable, and may be slipped out and in when necessary; the corners of the frame are shown at *D, E*. A piece of board is fitted against the lower side of the tank to moderate the heat. The chicks pass in and amongst the flannel strips as shown in this engraving. At figure 4 is shown a top view of the mother, with the two chimneys, the supply tube, and the mode of circulation of the water around the partition, *A, B*. Handles are fixed to the frame of the mother (see fig. 2), by which it may be moved when necessary.

A Filter for Cisterns or Tanks.

Rain water collected from roofs is always more or less impure from dust, soot, leaves, or the droppings of birds, and in time these collect in the tank and render the water undesirable even for washing. We have given several methods of filtering such water, and now present one which has been described in a recent Agricultural Gazette. It is called the "nose-bag filter," and is shown in the accompanying engravings, which render much description unnecessary. The filter may be made of earthenware, cement, or of soft brick. There is an outer cylinder and an inner core, both of which are perforated, but the perforations of the outer cylinder do not reach the bottom, hence the sediment in the cistern is excluded, and those of the core are only at the bottom, so that the water is forced to pass through the filtering material—sand, gravel,



1.—SECTION OF CISTERN.

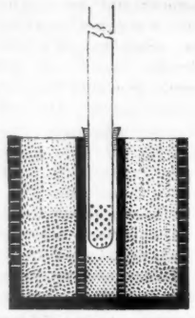


Fig. 2. SECTION OF FILTER.

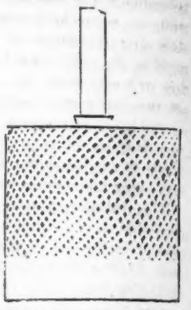


Fig 3. COVER OF FILTER.

and charcoal—before it can be pumped up. The suction pipe needs to be well packed into the core, and a rubber or leather ring should be closely fitted, to exclude all water that has not passed through the filter. The cistern and pump are shown at figure 1; a vertical section of the filter at figure 2, the dark shading represents a layer of charcoal; the lighter shade, coarse gravel; and the lightest, which is next to the inner cylinder, fine gravel. At figure 3 is the perforated outer cylinder, and the collar around the pipe; and at figure 4 a horizontal section of the filter is shown.

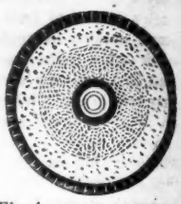


Fig. 4.—CROSS-SECTION.

Dry Cellars.

No house that is built above a wet cellar can be healthful, and no damp cellar is a fit place for keeping milk, butter, vegetables, or any articles of food. Localities where the soil is not naturally drained, or is retentive of water, and where the surface is level, should not be chosen for building sites. In cases where the house is already built, and the cellar is damp or wet in consequence of an unfortunate selection of ground, some method should be found for draining the soil and removing the water. This is very easily done when the surface is rolling and a drain can be dug from the bottom of the cellar, and made to discharge at a lower level; but where the surface is level, it is not possible to do this. Several correspondents who are in this predicament have applied to us for some remedy, and we suggest the following plan. As nothing can be done outside of the cellar, a drain should be dug all around the cellar, inside, as near the foundation wall as possible, and at least two feet deeper than the bottom of the wall. At the bottom of the drain two-inch round tiles should be laid so carefully that they cannot be displaced in covering them. These may be covered and the drain filled to the top with

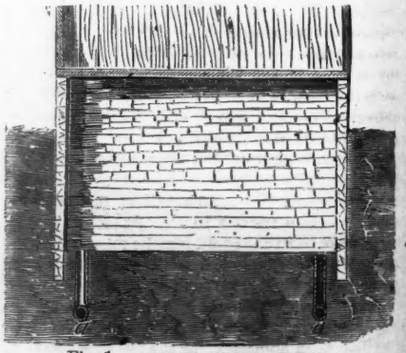


Fig. 1.—SECTION ACROSS CELLAR.

gravel. The tiles should be carefully joined at the corners of the cellar, and at the most convenient part of the cellar a well or cistern should be dug,

into which the drains may discharge. A pump may be fixed in the kitchen above, connected to a pipe which passes into the well, and the water may be utilized for various domestic purposes. The well may be arched over or covered with a stone slab, and the whole of the cellar floor and walls may be covered with hydraulic cement. As the flow of water from the outside is completely cut off, the cellar floor must be dry, unless the well

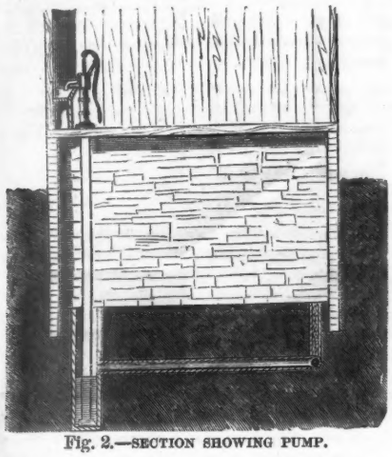


Fig. 2.—SECTION SHOWING PUMP.

should overflow, and when this is feared, the cover may be removed so as to watch the rising of the water. This should be done at those seasons when there is most water in the soil, as in the spring or after heavy rains. A section across the cellar floor in which the relative positions of the drain and foundation walls are shown in figure 1, and at figure 2 is shown a section lengthwise of the cellar with the position of the well, the drain discharging into it, and the pump in the kitchen above. In case the flow of water is more than can be used in the kitchen, the excess should be pumped into the sink to be carried off by the sink drain. We have seen such an arrangement as this which operated satisfactorily, and not only thoroughly dried the cellar, but by carrying the well to a depth of eight feet, furnished a permanent supply of excellent water.

Unloading Corn.

By-and-by will come corn-husking, and every little help that will ease the troublesome labor of transferring the corn crop from the field to the crib will be gratefully accepted. We have used both of

Fig. 1.—BOARD FOR UNLOADING.

the contrivances here shown (figures 1 and 2), to help in getting the ears out of the wagon-box. At the start it is difficult to shovel up the corn, and until the bottom of the wagon-box is reached, the shovel or scoop cannot be made to enter the load. But if a piece of wide board is placed in a sloping position, resting upon the tail-board of the wagon

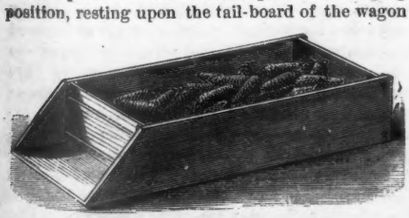


Fig. 2.—UNLOADING ARRANGEMENT.

(fig. 1), the shovel can be used with ease at the commencement of the unloading. Another plan is to make the box two feet longer than usual, and place the tail-board two feet from the end (see fig. 2). When the tail-board is lifted, the ears slide down into this recess, from which they can be scooped with ease.

Stalls for an Octagon Barn.

In describing an octagon barn in July, we mentioned that the stalls might be made low, so as to exhibit well cared for stock in an attractive manner. Some inquiries have been made as to the modes of constructing such stalls, to which we give in reply descriptions and illustrations of some that would be appropriate. At figure 1 is shown a series of double stalls, separated by short partitions, not more than three feet in length, and four feet in hight, so that in looking over the stalls, all the cattle are seen. These stalls may be made six feet wide, and five feet long, arranged with a gutter at the rear to receive the droppings, eight inches deep, and a feed-trough at the front, divided by a small partition into two feed boxes, one for each cow. The cows should be secured by chain-ties,

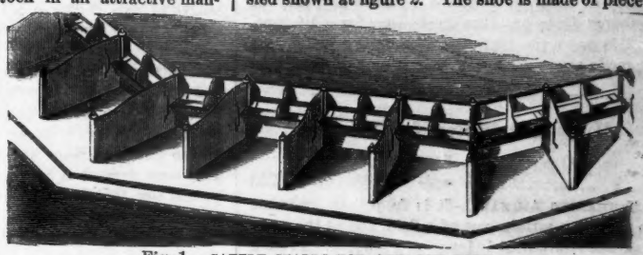


Fig. 1.—CATTLE STALLS FOR OCTAGON BARN.

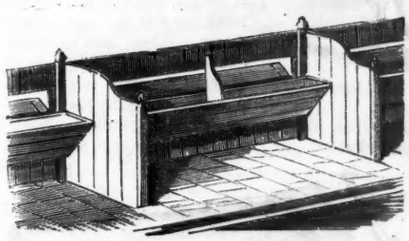


Fig. 2.—PLAN OF SHORT STALLS.

with rings sliding upon iron rods fixed to the sides of the stalls. The feed troughs may be filled from the feed passage in front of the stalls, through falling doors lengthwise of the stalls. The stalls should be built upon posts, firmly mortised into the beams beneath, and should be strengthened by stout straps of iron, let into the posts and beams flush with the surface, so that there may be no projecting edges to injure the cattle. At figure 2 is shown a plan of stalls, similar to the preceding, excepting that the partitions are shorter, but perhaps less safe, as the cows might possibly tread upon each other, and thus cause injury to the teats and udders.

Cutting Marsh Hay.

The investigations of Prof. Storer, of the Bussey Institution, regarding the feeding value of marsh or salt hay, should have the effect of raising this coarse and cheap, but often neglected fodder, in the estimation of farmers. Thousands of tons of marsh hay made from the coarser kinds of grasses, sedges, and even such rushes as that known as the "black grass" (*Juncus Gerardi*), of the wet sea-side swamps, are wasted every year because they are supposed to be useless as feed. But on the contrary, many farmers have annually gathered such hay with care, and have profitably fed it to their cows and other cattle, along with some ground feed. And now Prof. Storer has analyzed these coarse and neglected plants, and has found that they are both wholesome and nutritious. The average composition of five samples of salt hay was found by him to be as follows, viz: water, 8.40 per cent; ash, 6.93; albuminoids, 6.33; carbo-hydrates, 45.38; and cellulose, 32.96 per cent. "Black grass" was found to contain 84 to 87 per cent of dry organic matter, 2 to 2¼ per cent of fat, and more than 1 per cent of nitrogen, the seeds being doubly as rich in fat and nitrogen. Fresh marsh hay was found equally valuable for feeding.

To continue to neglect this coarse hay, would be a waste of resources which should by all means be economized. But there are some wet, undrained marshes upon which it is disagreeable to cut the grass, as one must work with wet feet, and from which it is difficult to draw the hay, because the soft soil will not bear horses or cattle upon it. These difficulties may be overcome by making use of the swamp shoe shown at figure 1, and the light sled shown at figure 2. The shoe is made of pieces of ash or other tough wood a quarter of an inch thick. For want of anything better, pieces of the staves of flour barrels will answer the purpose well. The pieces should be four inches broad, and fastened together with broad-headed, soft iron nails (clout nails), such as are used in building boats, and which may be clenched. A staple made of light wire is driven into each side of the center piece, and a leather strap is passed through these and over the toe of the boot, and the ends then being crossed in the manner of an old-fashioned sandal over the instep, are buckled at the back of the foot over the heel. The foot is attached to the shoe only by the toe, and the heel is free, so that when the wearer takes a step, the heel can be raised and the shoe will hang to the toe only. As the hind part of the shoe is the heavier, that drags upon the ground, and the forepart only is lifted when a step is taken, exactly as in the case of walking with a snow-shoe. It is necessary to take wide steps, so as not to place one shoe upon the other in walking, the consequence of which would be a trip and a probable fall forwards. But this is easily avoided after a little practice upon dry ground. When these shoes are worn, the mower may pass over the softest places in safety, and if he takes the precaution to thoroughly saturate the soles of his boots with tar and dry it in before a fire a day or two previously, and smear the uppers of the boots with tallow, or some waterproof blacking, he may have dry feet after a day's work in a very wet swamp. If there are high and dry knolls in the marsh, the cut grass may be drawn thither upon a light sled made as shown in figure 2, to be spread for drying, or to be stacked. This sled is made of strips of oak or pine fencing, six inches wide, and three-quarters thick. The runners are steamed at each end; or soaked in boiling water; or sponged with water, and the wetted part held close to a fire until the ends can be

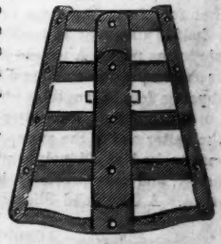


Fig. 1.—MARSH SHOE.

Fig. 2.—MARSH SLED.

bent into the shape shown. They are then fastened to the raves, which are of similar pieces of wood. A small piece of hoop iron or of tin from an empty fruit-can should be nailed over the joint to strengthen it. A piece of fencing is placed beneath the middle of the rave and nailed there above and below, as a support, and another piece is nailed upon

each side of this as a brace to stiffen the sled. The two runners are then held together by as many benches as may be thought proper, and the sled is made. A man can easily draw 300 or 400 lbs. of hay upon this over a smooth meadow, and in this way the cut grass may be drawn on to dry ground, where a team can be brought to it, or left until the surface of the meadow is frozen. When managed thus, the hay may all be cut from almost any marsh, and if brush is kept down and the marsh rightly managed, from two to four tons of hay, worth nearly as much as common meadow hay, may be gathered from any acre every year for a lifetime. In this way a piece of otherwise useless marsh may be made worth as much as any acre of the farm.

Hints and Helps for Farmers.

BY L. D. SNOOK, YATES CO., N. Y.

TETHERING ANIMALS.—It is frequently desirable to pasture a certain part of a field, and at the same time not convenient to fence off a portion. In such case tethering may be resorted to, and the Adjustable Sweep Tether, shown in figure 1, will be found convenient. A post four inches in diameter, and four and a half feet in length, is driven one foot into the ground; in the top is an inch hole four inches in depth, into which a hard wood pin fits loosely. The sweep is from 15 to 20 feet in length. Two feet from the large end, a hole an inch and a half in diameter is bored, and this fits over the pin in the post. A weight is suspended at one end as shown; at the small end of the sweep a strap or rope ten feet in length is attached, to which is secured the end of the halter. The weight elevates the halter end of the sweep, but yet allows the animal to feed at all points within the length of the halter, and also prevent injury from any entanglement. A Combined Sliding and Swinging Tether

Fig. 1.—ADJUSTABLE SWEEP-TETHER.

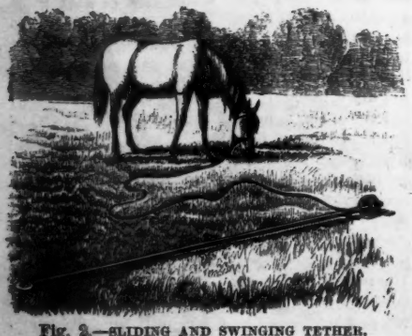


Fig. 2.—SLIDING AND SWINGING TETHER.

is shown in figure 2. This is less cumbersome than the above. The sweep is 15 feet in length and 2 inches in diameter; at one end an iron is attached with a hole in it two inches in diameter, the opposite end is provided with a wheel five inches in diameter. A rod three-quarters of an inch in diameter, 15 inches in length, with a loop at the top, as shown, is driven in the ground, through the hole in one end of the sweep. The halter is attached to a sliding ring, which by its self-adjustment traverses easily back and forth as the horse feeds.

THE RAIL FENCE GAUGE.—The common method of laying off the corners of a rail fence, is to pace or guess at the distance apart, and the proper angles of the corners. The consequence is that few rail fences are in line or have uniform angles. If a gauge similar to the one represented in figure 3

Fig. 3.—RAIL-FENCE GAUGE.

were used, this fault would be avoided. First I lay off a pattern corner in accordance with the length of rails or exposure to heavy winds. I then take two or three inch strips of uniform length, and just long enough to reach to the center of the foundation stones, shown in the engraving, then nail one end of each together and connect midway by a third strip, which also serves as a handle when moving it. A line is drawn as shown, and the ends of the gauge indicate the corners along the line. This arrangement is inexpensive, the corners can be laid out rapidly, and when built, the fence will present a uniform appearance, which in itself more than repays the little extra labor required.

STONE BOATS.—For moving plows, harrows, etc., to and from the fields, and for many other purposes, a stone boat is far better than a sled or wagon, and is many times cheaper than either. Two plans of construction are illustrated. The boat shown in figure 4 is of plank, six feet in length, one foot at one end being sawed at the angle shown. Three planks, each one foot in width, will make it of about the right proportion. A railing 2x3 inches is pinned upon three sides, while a plank is firmly pinned at the front end, through which the draw-

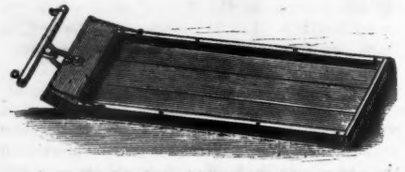


Fig. 4.—PLANK STONE-BOAT.

bolt passes. That shown in figure 5 has some advantage over the former, a cheaper quality of wood and of shorter length can be used, and when one set of runners is worn out, others can be readily attached without destroying the frame. Oak or maple plank should be used for the best boats, and when runners are used, the toughest wood at hand should be selected. Don't think because it is only a stone boat it is not worthy of being taken care of.

CELLAR CISTERNS.—The rain-water cistern or reservoir is a great convenience, yet how many farmers' wives, to get soft water, are obliged to set under the eaves or conductor, just before or during a rain storm, a barrel, wash-tub, or other utensil! The best, most convenient, and cheapest cistern is that known as the "cellar cistern or reservoir." The majority of cellars are large enough to have such a cistern, and a few feet square in one corner can be easily set apart for it. The square form will be found most convenient; the walls should be ten inches in thickness, the foundation should be six or eight inches below the level of the cellar bottom, and laid up with hydraulic cement from top to bottom, and finished with two coats upon the inside and one on the outside; the bottom should be filled one inch in depth with broken stone firmly pounded down and covered with two coats of cement. The two inside walls need not be as thick, as they rest against the cellar wall. If constructed when the cellar is made, the cellar wall forms two sides of the reservoir, and these should be laid up with small flat stone, and cement applied freely. The wall may be built up to 18 or 20 inches of the joists, leaving room enough for a person to enter to clean or repair it. The inlet pipe is placed as shown in the illustration (fig. 6). A flat stone should be laid on the bottom for the water to fall upon when nearly empty. The outlet pipe discharges all superfluous water into the drain when the reservoir is nearly full, and it should be larger than the inlet

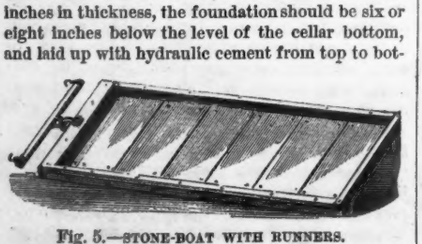


Fig. 5.—STONE-BOAT WITH RUNNERS.

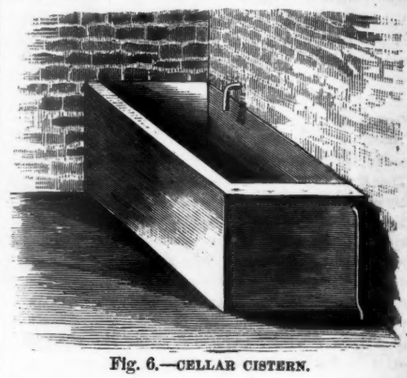


Fig. 6.—CELLAR CISTERN.

pipe, to prevent any accidental overflow. A reservoir 4 feet wide, 8 feet long, and 5 feet high, inside measurement, will hold 30 barrels.

Hog Pens and Hog Cholera.

The weight of testimony regarding "hog cholera," or intestinal fever, as it might be more properly called, goes to show that it results either from a variety of circumstances, all of which, however, can be classed under the one distinguishing head of *neglect*, or violation of proper sanitary conditions, or else it is due to contagion or infection from diseased herds. This seems to be well founded, and if so, the remedy is a simple, although not an easy one. To change the whole manner of keeping swine, and to avoid the danger of infection from the herds of those farmers who never read and never learn anything, is no easy matter, however easy it may be to say that it must be done. Much may be done by example, and if those who can adopt healthful methods of herding their swine, avoiding damp, filth, crowding in the pens, and insuring cleanliness in the feed and water, and isolate their herds, will use these precautions, we do not doubt that the plague will be stayed. The first precautions should be to provide roomy, dry, clean, airy pens, supplied with clean water, and kept in a wholesome condition. It is not the influence of locality, but the better methods of herding that keeps the Eastern States free from this pest.

Flax Manufacture in America.

The commencement of a new manufacturing industry in this country is exemplified in the successful establishment of a small linen factory at Manchester, N. H. Some enterprising parties secured some land, sowed it to flax, gathered the crop, and prepared it for spinning, hired a Scotch flax-finisher, procured spinning machinery, and *one* loom, and worked up the flax carefully and slowly until by easy steps the business was thoroughly understood and mastered. The amount of money risked was small, and in case of failure, the loss would have been trifling. But it is precisely such ventures as this, and so conducted, that succeed, and this experiment has become a success. A linen manufactory is about to be put into operation, with a certainty of its being practicable and profitable. It was in this way that cotton manufacture began in the Southern States, where it is now a grand success. Woolen manufacture began similarly in the West where it is now firmly established, and we are well convinced that it needs only to be begun

in this careful manner, for flax manufacture to become also an established business in the West.

Cheap Production.

Cheap production is now the chief necessity of our agriculture. American farmers have now to compete with the whole world, and many of our competitors live very poorly and cheaply, and have land as cheap as ours. To compete with these, we are under the disadvantage that we cannot live as poorly or as cheaply as they do, our higher civilization not admitting of it. We must, then, raise larger crops with the same labor than they do, or use our labor more effectively. Many persons would have us believe that we must necessarily produce as high an average per acre as the English farmers do, or fail in our competion with them There is no necessity for this. There is a point in production beyond which we cannot go with profit. The Kansas or Nebraska farmer, who grows 25 bushels of wheat every other year for 20 years upon his rich, cheap soil without manure, and with a minimum of labor and cost, can easily compete with the English farmer, who pays an annual rent equal to the whole purchase money of his competitor's farm, and has to spend ten or twelve dollars per acre in manure. But if the western farmer should, by fertilizing his land, double its yield, the extra 25 bushels would not be grown at a profit. Here is a principle which affects our whole agriculture, and no rules can be safely laid down for us which violate this principle. We must discover the limit of the profitable production of our farms, each farmer for himself, and avoid any attempts to pass that limit. The whole secret of good and profitable farming is to extend the limit as far as possible; it is bad and unprofitable farming to either fall below that limit or to go beyond it. There are instances in which an extremely large yield is grown at a positive loss, as was the case of that farmer who raised 100 bushels of corn per acre with the expenditure of $102 worth of manure and labor, while he raised 60 bushels without the manure and with less than half the labor. This may be called "high farming," but it is not profitable.

Farmers and Middlemen.

We have received an interesting communication from a correspondent in Northwestern Texas, which opens up the question as to how far can farmers dispense with the services of those persons now known as "middlemen"; that is, those who come between the producers and consumers, receiving the farmers' produce, storing it until sold, and then distributing it to the consumers as they may want it, and purchase it. This term, "middlemen," has been used by some of those who take an active part in adjusting the relations of farmers with the rest of mankind as one of reproach, and the "middleman" has therefore become in the eyes of many farmers as a sort of parasite which lives upon them, and takes a portion of their earnings without giving any adequate return for it. Now it should be evident to any intelligent farmer that he cannot leave his farm, and go out into the wide world seeking customers amongst those who consume his produce, nor can those who need his beef, pork, flour, butter, eggs, and all the rest of the things that they need, come to him for their supplies, except in very few cases. Even in these few cases the greatly increased labor attending the disposal of his produce leads the farmer to charge a somewhat higher price for the trouble of retailing out his produce. But in the vast majority of cases the farmer could not reach a customer without leaving his work, losing his time, and going to a great expense. Somebody *must* do this service for him, and this is precisely where the "middleman," or the dealer, commission agent, merchant, shipper, jobber, and retailer, or whatever else he may be called, comes in. It is clear, then, that there is a need for this "middleman." The farmer does not stand by himself in this respect. We know of no class of producers that do not employ some person to dispose of their productions for them. In the early periods of society, a man who made a pair of shoes or a quantity of butter, would go out into the market and wait there until a customer appeared. In the same way the small farmer even now carries his produce in a basket, and the shoemaker hangs his shoes up in his shop or stall, to expose them for sale. But as soon as he enlarges his business and becomes able to do so, he ships what he has to sell to a large dealer, and this *one* man does the work for hundreds. This is one of those arrangements which, operating universally, has built up the present condition of society, and in fact is its principal foundation. Let us upset this arrangement, and society as now constituted would fall to pieces; every man would have to do every thing for himself; there would be nothing that depends upon the united and congregated effort of a people any longer remaining. There would be no houses, no roads, canals, ships, no government, and no society. We should return to barbarism. The question then arises, is there anything that is now done through this necessary agency of the middleman, that the farmer can do for himself? We confess this is a difficult question when viewed in its largest sense. In its narrowest sense we should say that there are some business operations which could be performed *for* the farmers by an appointed agent, who should represent a large number for whom now there are perhaps two or three or several agents. It seems very clear that there are too many persons to do the farmer's business. This is a disadvantage, because it tends to increase the cost of doing this service. If a number of farmers then can arrange to do their work through one agent, where formerly three were employed, the cost should be reduced in proportion to the expense saved. If there are two elevators at one railroad depot, where one would be sufficient, then grain could be shipped at half the cost, if one only were employed. But the farmers must be in the position to prevent the one elevator from raising the charges to the former rates, which the owner would do, if he had the power. The farmers must therefore control the elevators themselves, employing the hands to work it. This they can only do by owning it. To own their elevator then, is not only legitimate, but actually necessary for them to do; *if they possess the capacity to manage it as well as such a business should be managed.* They would then have their grain shipped as cheaply as might be possible. This is an illustration of what might be done, and this modification of present business arrangements could be carried just so far as the farmers possessed the necessary business capacity and experience to properly manage their enterprise, and secure the best efforts of their servants, but no farther.

The field for these business enterprises at present would seem to be limited to those which do not require a technical education for their conduct and operation. For instance, an elevator, a pork packing establishment, a traveling steam thrasher, a grocery, dry goods, or shoe store, a storage warehouse, a dock and a ship for carrying their goods to foreign countries, or a canal-boat for conveying produce to a distant market, would all seem to be within the powers and capabilities of a number of intelligent farmers; but a railroad, a woolen or cotton factory, a machine factory, and similar mechanical operations, which require for their successful working much hardly acquired technical skill, or great business experience, which can only be profitably effective when the operator is the owner of the establishment, would seem to be outside of the farmer's province, and necessarily doomed to failure in his hands. We see no reason why farmers should not look towards the cheapening of the services of those whom they employ as their agents for the disposal of their produce, and employ their spare capital in the direction pointed out, as soon as they have exhausted their efforts to make their farms productive, and have acquired the necessary business habits and experience for eventual success.

Prospects for Wool.—An extensive sale of woolen goods recently held in the city of New York has brought the woolen business down to hard bottom. A million and a half dollars worth of goods were sold at auction in one day, and thus prices and values were settled. It is well to know the worst, and the worst seems to be that the price of wool has touched bottom. As a hint to those who will now cull out their flocks and improve the residue against the expected return of better times, we give the current prices of wool in New York in June, as follows: Super Saxony fleece, 38 to 35c.; Full-blood Merino 30 to 33c.; Half-blood Merino 36 to 40c.; Common fleeces 33 to 35c., and Combing fleeces 50 to 55c. per lb. It will be seen that combing wool is the most valuable in the market, and that medium wools are worth more than the finest. Combing wool sheep are the best mutton sheep, and the value of one well-grown grade Cotswold, with its fleece, is equal to that of three fine wool sheep. Although a Cotswold costs more to feed than a Merino, yet the cost is not in proportion to the increased value of its wool and mutton.

A Sheep-shearing Machine.

(*See illustrations on next page.*)

Many efforts have been made to produce a machine for shearing sheep that should enable the work to be done as well as by hand, and with greater rapidity. Some inventive mechanic in England, some time ago, made a machine for this purpose, which was tried in Australia, but we had recently to record its failure there. Now we have a machine made by an American mechanic, who has spent eight years in perfecting it, and which seems to be perfectly adapted to the work required. We have tested the machine, and feel satisfied that a sheep can be sheared in five minutes much better than could be done by hand. The fleece is cut off very evenly and closely with this machine; the sheep cannot possibly be cut by it; and there can be no cutting through and injuring the staple. The cutting machine is shown at figure 1. The cutters, made precisely upon the principle of the mowing-machine knives, are of chilled steel, and are self-sharpening. The motion is communicated by means of compressed air, and 3,000 revolutions per minute can be easily given to it, although 1,500 revolutions are sufficient for a working speed. The air-pump is shown at figure 2. This is worked by a crank, and one man can produce sufficient power to work 25 machines. The air is forced from the pump through a flexible rubber tube, which allows ample freedom of movement. The working pressure of the pump is 5 lbs. per square inch, but it may be worked up to 45 lbs. by using an engine or a windmill. One pump is sufficient to work 25 of the shearing machines, and these may all be attached to a supply pipe, from which the compressed air may be let off or on to the machine as needed, by taps. Thus one pump will supply power for 25 shearers, and these having merely to hold and direct the machine, which barely fills the hand, and requires no muscular force to work it, are not exhausted, or required to stoop over the sheep—if benches are used—and may therefore work more quickly and certainly than with the ordinary hand-shears. The cost of shearing will be much reduced, and as the cost of the apparatus is very moderate, almost every person owning a flock of sheep would find it advantageous to use it. The larger engraving represents the method of using the machine, in which the position of the sheep is the same as in ordinary shearing; we should, however, recommend the use of a shearing-bench or chair, by which the necessity for stooping and bending over the work would be obviated.

The machine will also be found very useful for clipping horses, for which purpose the motive power used, and the method of attachment, are well adapted. It is also perfectly adapted for shearing pelts, instead of "pulling" the wool from them, by which the quality of the fleece is injured. The inventor and manufacturer is Mr. P. Anderson, of 331 East 22d st., New York, whose perseverance and ingenuity in perfecting this useful invention, certainly deserve great praise, and we have no doubt that the machine will be used as extensively in all the ways here indicated, as its merits demand.

Virgin's Bower—Leather Flowers—Clematis.

Among the horticultural achievements of recent years, there are few finer than the improvements that have been made in the genus Clematis. The fine hybrids that have been added to our gardens, especially by the labors of the Messrs. Jackman, are among the most beautiful of flowers, and though the newer sorts are rather expensive, there are a plenty of good older sorts that may be had at prices within the reach of all. For low climbers there is nothing so showy. Referring to the catalogues for these choice garden varieties, we would call attention to our native species, of which, take the country through, there are perhaps about 20. These vary a good deal in their habit. There are several erect herbaceous species which do not climb at all, but the majority are climbers, attaching themselves to bushes or other supports by twining their leaf-stalks around a twig or whatever else may be at hand, and afford interesting illustrations of this way of climbing. The most showy of our native species is *C. verticillaris* (formerly called *Atragene Americana*), a somewhat rare plant, found on rocky hills as far south as Virginia. This, which was figured in April, 1867, has solitary large bright purplish blue flowers two or three inches across, appearing in May. Those who are fortunate enough to meet with this plant, will be well repaid for the trouble of transferring it to the garden.

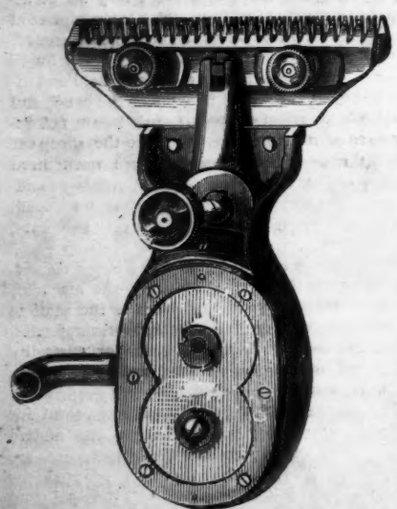


Fig. 1.—SHEEP-SHEARING MACHINE.—(*See page* 299.)

The best known, as it is the most common species, and found all the way from Canada to the Gulf of Mexico, is *C. Virginiana*, the common "Virgin's Bower," a name given to a related species in England, which is also called "Traveller's Joy" and "Old Man's Beard," names in some localities also given to our plant, the last mentioned referring to the hairy tails to the fruit which make the plant quite conspicuous in autumn. This was described in November, 1868, where will be found an excellent engraving. Its pleasing dark-green, cut or lobed leaves, the great abundance of its white flowers in July and August, when flowers are scarce, and the great woolly tufts it presents when in fruit, all make it a desirable climber, and being so common is within the reach of every one. When transferred to the grounds, where it is not obliged to struggle with other plants, it grows most luxuriantly, and when established, will climb to the hight of 15 to 20 feet or more in a season; a large portion of this growth dies down each winter, as only the lower part of the stem is woody. The flowers, though individually small, are in large clusters from the axils of the leaves, and clothe the whole with a sheet of white. As a covering for arbors or screens it is an admirable plant. Some have found it difficult to move from its wild localities; most wild shrubs are poorly furnished with fibrous roots, being crowded by other plants, their roots run to a great distance and throw out but few fibers; in removing all shrubs from the woods and copses, they should be cut back very severely to insure success. This grows very readily from seeds, which, if sown as soon as ripe, will give an abundant crop of young plants which are much more manageable than the wild ones. Still another group of our native climbing species of Clematis, have rather large bell-shaped nodding flowers, each solitary upon a long stalk in the axils of the leaves. These, while not so showy as either of the foregoing, are interesting plants, and worthy of a place in a collection. The calyx (for in these plants the showy part is not the corolla, but the calyx), in this division is remarkably thick and leathery, on which account the most common species, *C. Viorna*, is called "Leather flower." The engraving shows a southern species of this

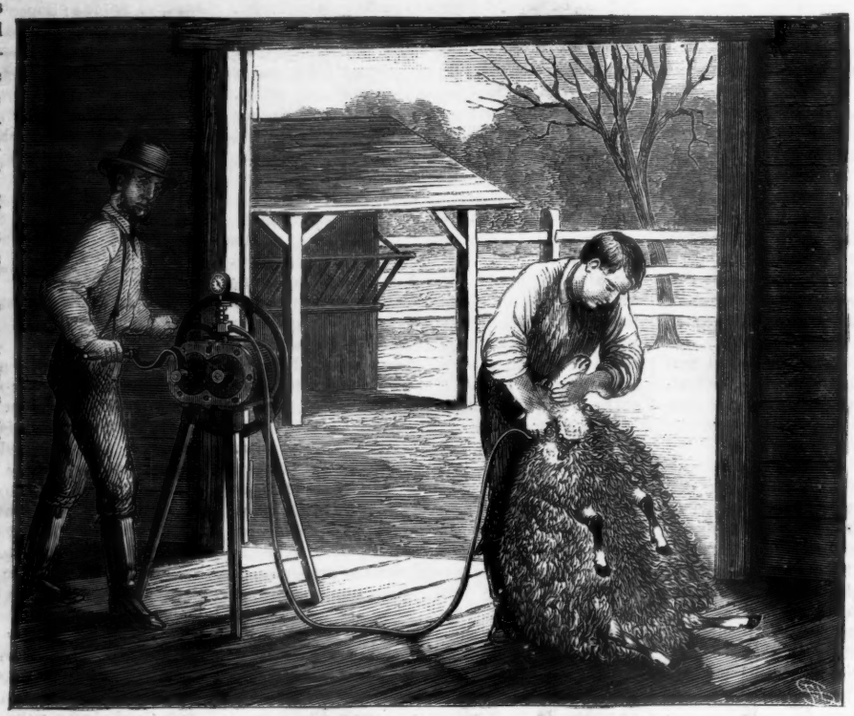


Fig. 3.—SHEARING SHEEP WITH THE MACHINE.—(*See page* 299.)

group, *C. crispa*, which we may call the "Crisped Leather-flower," the margins of the thick divisions of the flower being wavy or crisped. This species is found from Virginia southward, but proved quite hardy with us in the severe winter of 1874–5. The stem does not reach higher than 5 or 6 feet; the flowers are about an inch and a half long and of a delicate lilac-purple color. The Leather-flower, *C. Viorna*, already alluded to, has a similar habit of growth; it is found as far north as Pennsylvania and Ohio, and has rather large dark reddish-purple flowers. "Pitcher's Leather-flower" (*C. Pitcheri*), growing from Illinois southward, has a similar appearance, with its purplish flowers smaller than the one figured. It would be well for some pains-taking florist to try what careful cultivation and selection would do with this "Leather-flower" group of Clematis; one of them sometimes produces two or three flowers to the stalk in the wild state, which shows a tendency to vary, and if the flowers could be increased in both number and size, the cultivator would be well rewarded for his trouble.

The Large-flowered Pentstemon.

The genus *Pentstemon*, belongs to the same family—the Fig-worts, with the Fox-glove, Mimulus, Snapdragon, and other well-known plants. One species is found from New England westward, but most of them belong beyond the Mississippi, and extend to the Pacific, there being some 70 species belonging to our

Fig. 2.—AIR PUMP.—(*See page* 299.)

territory. The florist's Pentstemons are hybrids obtained from *P. Hartwegi*, *P. campanulatus*, and other Mexican species, and are very beautiful and showy plants; new varieties of these

are annually introduced with florists' fanciful names; unfortunately these are not hardy in northern gardens, and being rather difficult of management, have tended to make Pentstemons unpopular. There are, however, among our native species several which are perfectly hardy, and so beautiful that they must eventually become popular. The genus presents a remarkable range of colors—pure white, blue, purple, the most intense scarlet, and many intermediate shades. One of the finest is the Large-flowered Pentstemon (*P. grandiflorus*), found in Wisconsin, and westward and southward. The plant is robust in appearance, often reaching the hight of three feet, with thick, closely sessile leaves, which, as well as the stem, are smooth and of a pale glaucous green, which makes the foliage noticeable. The flowers are in a long terminal cluster; they are oblong bell-shaped, and about two inches long; the tube is inflated below, with five nearly equal lobes at the mouth; the color is a beautiful lilac-blue, pleasingly shaded, it being darker upon the tube than upon the lobes. The flowers appear in early June and continue for some weeks. The above engraving shows a flower cluster, somewhat under the usual size, but as in all wood engravings, the charm of color is wanting. There are other Pentstemons that are more brilliant, but taking into account the stately habit of the plant, its attractive foliage, and its compact cluster of large flowers, which, if not showy, are very handsome, we do not think that there are any more desirable. This year we had a bed containing several hundred plants, which, when in full bloom, formed a horticultural display that would delight the heart of any lover of flowers. As we looked upon these plants, we wished that those flower growers who are so impatient that they will not sow seeds of plants that will not bloom until another year, could have seen these Penstemons in flower; we thought that they would convince them that there were some perennial plants worth waiting for. More than that, the hardy herbaceous perennials when once obtained will, most of them, bloom for many successive years. Plants of the genus Pentstemon have not received any common name; the botanical name is from the Greek words for *five* and *stamen;* most plants of the family have four or two stamens, but in this a fifth is present, but sterile, or without any anther; it is often quite conspicuous on account of having a beard of long hairs, though this is not the case in the species in question.

THE CRISPED LEATHER-FLOWER.—(*Clematis crispa.*)

THE LARGE-FLOWERED PENTSTEMON.—(*Pentstemon grandiflorus.*)

Rhododendrons in America.

The magnificent display of Rhododendrons by the English nurseryman, Anthony Waterer, at the Centennial, will no doubt give an impulse to the culture of these shrubs in this country which nothing else could have done. It is true that fine Rhododendrons were exhibited by the Messrs. Parsons, of Flushing, N. Y., and Henry A. Dreer, of Philadelphia, but their plants had not the prestige of having come from abroad; they were only varieties of well tested hardiness, and were shown in the open air. Mr. Waterer's collection being of tender and hardy varieties together, and shown in a most effective manner, made an impression upon the visitors that the others did not, and we doubt not that his exhibition has done much to awaken attention to these admirable plants. Probably a very large majority of intelligent persons who visited the grounds during Mr. Waterer's show, first made the acquaintance of the Rhododendron, and probably many of these think it is a "brand new wrinkle" in plant culture, brought across the ocean for the first time. We are warranted in this supposition when we find so intelligent a writer as Mr. Howells, in a generally excellent article on the Centennial, in the July Atlantic Monthly, expressing himself in a manner which shows that rhododendrons are a novelty to him. After speaking of "English Azaleas," (whatever they may be), he says: "At the fact that these [azaleas] and a houseful of rhododendrons could be safely brought so far and made to bloom so richly in our alien air, one may fitly wonder not a little."—We do not single out Mr. Howells for special criticism, but as an illustration of the notices of these rhododendrons which have appeared in the various papers and magazines, and as showing that even our best writers, when they touch horticultural matters, are at once "all at sea."—"Alien air" indeed! The rhododendrons, were, so to speak, only brought home. All of those exhibited that are of any use in open culture in this country, are in good part "native Americans." The *Rhododendron Catawbiense*, native in our southern mountains, may be regarded as the foundation of the whole set of hardy varieties, and only those with a strong

infusion of native blood are sufficiently hardy to plant out in our Northern States. Those who have written about this exhibition have evidently regarded the Rhododendrons as rare exotics, for the reason that a shelter was put over the plants to prolong their season of bloom, while in England, they with several others, are known by the distinctive name of "American plants." That the rhododendrons were brought "so far," and then were "made to bloom so richly," is no reason why one should "wonder." If there is a plant that is indifferent to removal, it is a hardy rhododendron. Crossing the Atlantic is nothing in comparison with the treatment we have known them to survive. It is one of the very few plants that may be taken up from the open ground while in full bud or bloom, put into a pot or tub, or even have a mat around the ball of earth containing its roots, be exhibited for a week, and then be put back in its place and go on and make its buds for next year, without minding the disturbance. On this account, rhododendrons are capital plants for tenants, as they are as readily moved from place to place as the cooking-stove, or other household article. Now that thousands of people have seen this fine show of these charming plants brought from abroad, they will be surprised to know that quite as fine and larger collections are to be seen in this country; near Boston, the private grounds of Messrs. H. H. Hunnewell, C. S. Sargent, and E. S. Rand, Jr., contain really magnificent collections of choice rhododendrons, and the commercial grounds of Hovey & Co., at Cambridge, are rich in fine old specimens. Near New York, Messrs. S. B. Parsons & Sons, and R. B. Parsons & Co., of Flushing, have these plants by the acre, all of hardy, well tested kinds. We hope that those who saw the rhododendrons at Philadelphia, have been so impressed with their beauty that their cultivation will be more general than it now is. We have these many years set forth the claims of these plants, and have many times stated that we did not know how a given amount of money could be so satisfactorily invested as in rhododendrons. Some who have written upon their culture have prescribed such a preparation of soil as would deter any unskilled person from trying the plants. Perhaps for the greatest possible perfection, a peaty soil is desirable, but the plants will be quite satisfactory in any good soil that does not contain much lime. On a limestone soil, special preparation must be made, but ordinarily they will grow where any other shrub will succeed. The most brilliant varieties must, in the Northern States, be housed in winter, but there is a sufficient number of fine sorts, giving a wide range of color, from white through rose and lilac to the different shades of purple, that withstand the most rigorous winters of New England. No plant is better adapted to ornament a city front yard; a single plant, even, is attractive, and a group of contrasted colors still more so. We advise those who propose to plant rhododendrons, to confine their first attempts to varieties of well tested hardiness, and for this, the experience of our own dealers who make a specialty of these plants will be the best guide.

The Huckleberry.

[At the annual meeting of the New Jersey Horticultural Society, held in New Brunswick in January last, among other papers presented, was one on the Huckleberry, by Mr. C. W. Idell. This being a novel subject—indeed, so far as we are aware, this fruit has never before been mentioned in horticultural meetings—the essay was listened to with great interest, and was followed by a discussion. As Mr. Idell is one of our best known commission dealers, handling large quantities of all kinds of fruit, he naturally gave especial attention to the manner in which huckleberries are gathered for market, especially in New Jersey, and to the fruit in its trade relations. We give the portions of the paper which treat of the picking and marketing the fruit, and so far as we felt sure of them, have included, in [brackets], the botanical names, to connect the trade names with the plants that produce them. ED.]

Persons who live in densely populated and highly cultivated portions of the State, cannot realize that in our counties bordering on the coast, we have thousands of acres of land that have never been tilled, whose surface is covered with forests of trees and bushes, that produce annually millions of bushels of these berries. The surface of the land on which this fruit grows, is mostly level and sandy, with the exception of the lower portion, which contain large swamps, where, until quite recently, this berry grew undisturbed, in all its native wildness and beauty. Large fires often break out in these districts, and devastate hundreds of acres, burning every tree and bush, but owing to the rapidity with which it travels, the heat does not always penetrate the soil sufficiently deep to destroy the roots of the bushes, consequently they soon spring up again with renewed vigor. Should these fires take place in the spring or early summer, the roots start readily, and by the fall often obtain a good growth, so that by the next season many of them begin to bear fruit, and from the second to the fifth year produce the largest berries and yield the heaviest crops.

Botanists place the plants producing our market huckleberries, in two genera of the Heath family. One, [*Gaylussacia*], has its leaves quite sticky when warmed by holding in the hand, due to minute specks of resin; the fruit of these has very hard seed, or little nuts in place of seeds. The others are Vacciniums, from the ancient Latin name.

The first to ripen, are those that are borne by bushes about two feet high, these [*Vaccinium vacillans*] grow on the higher and dryer portions of the land, and some say that where the surface is rolling, the fruit attains to a large size; these are a small, sweet, blue berry, and are covered with a fine bloom, and being hard, carry well.

The "Swamps," so called from their growing in the swamp-lands referred to, ripen next in order, and are the largest and richest of all the varieties. Some of them grow as large as the common black-heart cherry, are sweet, and very juicy, and are also covered with a bloom, equal to that which covers the Concord grape. They are very tender in their richness, which causes them to carry badly. [These are from *Vaccinium corymbosum*, very variable in the wild state]. This variety does not yield so quickly after burning, as the others, as it generally requires about three years to produce its first crop, yet in time it frequently grows to the hight of 10 to 12 feet.

The next in order of ripening, is the common variety with which you are mostly acquainted; it is medium in size, color light blue, sweet, without bloom, and is a good marketing berry.

Another variety [*Gaylussacia resinosa*], is medium in size, very hard, black, and glossy, and is known by the name of "Cracker." It has a tart flavor, and full of seeds which crack as you eat them, hence their name. They are not popular with the native consumers, but owing to their solidity, they are sought for by the shippers of this fruit to send to distant cities, where they do not have the privilege of selecting other and better kinds.

There is another variety that grows very abundantly in Ocean County, which I believe is somewhat confined to that section, and is known as the "Hog-berry." When ripe it is of a grayish-brown, quite large, dry, and hard, consequently bears transportation well, but does not possess much flavor. [*Gaylussacia dumosa*].

A later variety is called the "Bill," or "Dangleberry," they are large, of a bright blue color, slightly acid, and quite juicy, they grow on long stems, hence their name, "Dangle." [*Gaylussacia frondosa*].

The peculiar feature of this fruit is, that when picked with the stems on, they keep dry, but when separated the juice oozes from the berries, and in warm weather soon sours them.

The latest variety is called "Shiny Blacks," on account of their being so glossy; they are a trifle tart, but possess a good flavor, and last until the frost destroys them. [Probably one of the varieties of *Vaccinium corymbosum*].

This fruit begins to ripen by the first of July, then a succession of ripenings take place the entire season until killed by the frost. The first arrival of Huckleberries in the New York market is eagerly sought for, and are frequently sold from $10 to $12 per bushel, but as the quantity increases, the price gradually declines until it reaches $4 per bushel, when large quantities are received and sold at this price, and were it not for the interference of other fruits, I question if the price would fall below that figure; but a large crop of peaches seriously interferes with them, as well as all other kinds of fruit. As all this fruit grows wild, all are free to go where and when they choose to gather it, consequently thousands of persons, mostly women and children, find it a source of much pecuniary profit.

Mr. David Rogers, of Cedar Creek, Ocean Co., N. J., a veteran "carter," to whom I am indebted for much valuable information, informs me that "he knew of a family of seven persons, mostly children, who made $25 per day for two weeks in succession, by picking berries, and quite a number of girls to make $5 per day; and it is a very common occurrence for a mother with her family, from five to six children, to gather from three to five bushels per day. Of course the receipt of cash was in proportion to the market value of the fruit, yet in the early part of the season they frequently sold them from $5 to $6 per bushel."—Now what these persons could do, others could do also, and it shows conclusively that a large amount of money is earned by the people yearly, in picking this fruit.

In an interesting letter from Mr. Rogers, he says, "If you wish to see a happy set of laborers, take a ride with a carter through his district when he goes to gather the berries, and see the group of smiling, happy faces that crowd around the wagons to exchange their berries for the money, for you must understand this point, they don't trust. True, they look happy, and are, but many of them dress in unique, if not beautiful style, but their dress is adapted to their work, and when you see these young women with torn dresses, or perhaps with a pair of pants on made of strong drilling, you would not realize that they were the same beautiful girls that you saw on Sunday at church, dressed in the richest of silks, as closely pinned back as any Broadway belle, yet they are, and they are the women whose price is above rubies, many of whom now adorn the homes of many men of wealth and refinement."

As this fruit is scattered over such a large surface of country, the mode of gathering and marketing it is peculiar. It is done by a class of men who are called "carters." Previous to the ripening of the fruit, these men provide themselves with a number of boxes which contain either 8 or 16 quarts each, the 16-quart boxes are made without lids, but have a narrow strip across the top in order to prevent one box from dropping into the others, and damaging the fruit; at the same time it answers as a handle to the box. The 8-quart boxes are generally packed in skeleton cases with lids, each case containing either 4 or 6 boxes. When the fruit is sold, these boxes are returned to the shipper to be refilled. In the beginning of this shipping business they made use of an ordinary box containing from 16 quarts to 1½ bushels, and occasionally 3 bushels would be sent in one package, but this system necessitated the measuring of the fruit, which in time created dissatisfaction among the shippers, owing to the shrinkage in the measure reported as sold, from the quantity sent; gradually the present system was introduced, and these two kinds of boxes are now used by all the large shippers in the State. These carters select a portion of the "Pines" which they call their route, they drive through this route and meet the pickers at a named point, and at stated hours, and buy their fruit. This plan is adopted for the convenience of both parties, as it saves time and fatigue to each, yet these pickers are not so isolated that they cannot, or do not learn the prices paid by other carters. When the carter has gone his rounds and gathered his load of fruit, he proceeds with it to the nearest depot, and ships it to market, where it is generally sold by the box, not measured, as that would injure it. Years since, before the railroads penetrated every county of the State, these men had to cart the fruit many miles before they could reach a shipping point, and in

most cases it took them two days and nights to make a trip, as they followed the fruit and received the money for it before they returned home, but now they can make from one to three trips daily. As the telegraph also now connects with the leading stations on the line of their railroads, these carters are enabled to learn daily the prices for which their berries sell, consequently know what they can afford to pay, and if their statement is questioned by the pickers, they have but to produce the telegram to confirm their assertions.

In some instances one or more persons locate themselves at a prominent depot to buy such fruit as may be brought in from sections where there are no carters, or perhaps a picker having several bushels to dispose of, concludes not to sell to the carters, thinking he may get more money for his fruit at the station, which is generally the case, as there is more competition among these buyers. Persons accustomed to go in the woods and pick these berries for home consumption, cannot bear to eat them after they reach the cities on account of their being "mussed."

I know of no more appropriate word for the condition they are in, for they are not mashed. I do not wonder at them, but when we consider the jolting and handling they receive, you will not be surprised. Let me at the close of this article call your attention to these changes, not merely out of curiosity, but to show you why fruit should be handled more carefully by transportation companies, than it is. First, the pickers place them in their baskets, then they are measured, turned out into the boxes of the purchasers, then carted around over roots and stumps, until all are loaded, then to the depot where they are placed in the cars, then on the boat, then on the dock, then on the carts, taken to the store, where they are again placed in wagons to be carted over the stones of the city. These are the least of the handlings they receive, for they are often reshipped to other cities, to undergo another series of changes of like character.

How Flowers are Fertilized.

BY PROF. ASA GRAY.

ARTICLE VII.—FALSE INDIGO AND RED CLOVER.

A correspondent, evidently a keen observer, and who thinks that we make too much of cross-fertilization, mentions Red Clover as a self-fertilizing flower, and the blue False Indigo (*Baptisia australis*), as a cross-fertilizer. We have an idea that there is not much difference between them in this respect, but from what is generally understood about Clover, and from what we had seen of the False Indigo, we should have expected our correspondent to put it just the other way. Both belong to the pulse family, the plan of whose flowers and the arrangement for fertilization we propose to illustrate in a later article. Both are like Bleeding Hearts (of Article V), in one particular, namely, in having stamens and pistil shut up together in such a way that the stigma readily gets dusted with pollen from the surrounding stamens. So these flowers may be self-fertilized, but for all that, they are capitally arranged for cross-fertilizing, and actually secure the advantages of that method in a fair proportion of instances. How it is done, our illustrations next month may make clear. When we took our first look at the *Baptisia* blossoms this year, and saw how readily its stigma took pollen from its own stamens, we wondered why our esteemed correspondent hit upon this as a cross-fertilizer, but on inquiring we were told that when the flowers were protected from the bees, the plants set no fruit. Upon our next visit, in a sunny afternoon, we saw the honey-bees at work, and appreciated the admirable arrangement for cross-fertilization through their agency. Alighting on the four petals which stand forward and loosely enclose the pistil and ten stamens, the bee thrusts its head down into the flower between these and the upper or standard petals; its position and weight open and slightly depress the sac, and this brushes the stigma and the anthers against the hairy abdomen of the bee, the hind legs all the while actively moving among the anthers. In this way, passing from flower to flower, it was plain to see how the bees did the work of cross-fertilization.

Now as to red clover, the arrangement is essentially the same as in *Baptisia* and the rest of the pulse family, except that the flowers are crowded in a dense head, the petals are all united below into a prolonged tube, honey-bearing at bottom, and the filaments of the stamens are united. That some pollen reaches the stigma from contiguous anthers, at least when the flowers are jostled, is certain, and some self-fertilization must thus be effected if its own pollen acts. Yet Mr. Darwin found long ago, in England, that while 100 unprotected heads of red clover matured 2,700 seeds, the same number of heads protected from bumble-bees produced not a single seed. And in this country it is generally understood that the first Red Clover crop, which is in blossom before our bumble-bees abound, seeds sparingly, while the second produces seed freely. This is attributed either to the abundance of bumble-bees in the latter part of summer, or partly to the shorter tube of the later flowers, which makes their honey more accessible, and therefore more attractive, to other bees and species of insects. In Germany, according to Herman Müller, other insects than bumble-bees take part in the fertilization of red clover, so that Darwin's well-known chain of causation, which reads like a chapter from "The House that Jack Built," must be taken with some qualification, at least out of England. Concluding that red clover in that country is fertilized only by bumble-bees, he remarks that the number of bumble-bees depends on the number of field mice, which destroy their combs and nests, and that the number of mice depends on the number of cats in the neighborhood, so that an increase in the number of cats which catch the mice, which destroy the nests of the bumble-bees, which fertilize the red-clover blossoms from which they suck honey, might diminish the amount or tend to terminate the existence of red clover in any district. Some one, we believe in New England, added another link to this chain by suggesting that, as the number of cats kept depends on the number of old maids, these worthy members of the community might in certain cases be unwittingly the cause of the failure of the clover crop. But, coming down to sober facts, it is obvious that our early red clover sets a fair quantity of seed before bumble-bees are abundant, and some of this seed is likely to come from self-fertilization. Yet we do not learn that our critical correspondent has tested this, as Mr. Darwin did, by shielding clover-heads from all insects, and noting the result. On the other hand, the fuller fertility later in the season, when the clover-heads are largely visited by bees, goes to show that cross-fertilization takes place and is advantageous, if not absolutely necessary. To show that these flowers and all others of the pulse family, are constructed for crossing by means of flying insects, and that while some may be, others cannot be self-fertilized, will be our task in the next article.

Horticultural Clogs.

Mr. A. Moffett, Iowa, finding that pruning his vineyard, when the ground was covered with wet snow or a slight covering of mud over frozen

A CLOG FOR THE GARDEN.

ground, was conducive to cold feet and consequent discomforts, devised a pair of clogs to overcome the difficulty. The device is shown in the engraving, and consists of blocks of the shape here given, made of any light wood; an excavation is made for the heel of the boot, and two holes are bored for straps, by means of which it can be fastened at the heel and toe. They are made high enough to keep the feet well up out of the snow or mud. Mr. M., instead of running to the patent office with his contrivance, gives it for the benefit of his brother horticulturists. In a large vineyard one can not always wait until the surface is in a condition to allow the pruning to be done with comfort, and we have no doubt that this clog—or as Mr. M. suggests, wooden shoes, would much facilitate operations. Wooden shoes are not to be had everywhere, but any one can make a clog of this kind. Though this is not the season that such an affair is required, we give it now rather than run the risk of having it crowded out at pruning time.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

Home Topics.

BY FAITH ROCHESTER.

Where shall the Home be?

Of course we shall settle ourselves where there seems a reasonably good chance to obtain the necessaries of life. The place where one can make money fast is not always the place where one can get a good living—since it is very true that "man cannot live by bread alone." To most people, the "necessaries of life" include, besides food, shelter, and raiment, certain social and educational advantages, as good neighbors, congenial friends, nearness to church, school, and post-office. Important as these considerations are in selecting a residence, not less than any, or than all together, is the question of health, since upon health depends the ability to enjoy other blessings. It is unwise to seek a permanent home in any place where there is serious malaria. *Malaria* means bad air, which may be simply *damp* air, so conducive to consumption as well as other diseases. It may be *miasm*, which is air poisoned by floating particles of putrifying animal or vegetable matter, the air of some swamps and undrained low lands—also such air as becomes the private inheritance of many families on account of their ignorance or carelessness. People go thousands of miles in search of pure air, and the change only benefits them until they have had a chance to create about them the same kind of bad air from which they sought to escape. They charged upon the State they left, the blame for diseases which were simply the result of their own disobedience to sanitary laws. Probably there are unhealthly locations in every State, and no one who would have a healthy home should make it in or near a swamp, or on badly drained land.

The building site should be at least level with the surrounding land, and somewhat elevated if possible. It is uncomfortable to mount a steep hill whenever you go home, and a house too much elevated above the surrounding country takes the full force of all storms. But this is better than to have your yard and cellar flooded by rains running from land sloping towards your house. Even the water that pours from your roof may become a nuisance if there is no provision for its escape from the soil close around the house. If it is not treasured up in cisterns, it should easily run away from before the doors and windows. The dirt thrown from the cellar may make a sufficient slope for this purpose. A house set low seems more hospitable than one which is entered by a flight of several steps; but we must remember that the air near the ground is more apt to be damp and unwholesome than that which is higher above the surface of the earth.

If you can choose the situation for your house—if you are looking at various "lots" with a view to purchasing, or if you are studying the comparative advantages of several building sites upon your farm—consider beforehand where you can arrange all outside conveniences so that they may be handy and wholesome. Think, too, of the effects of sun and shade—how to secure plenty of sunshine for winter, and plenty of shade for summer comfort

In summer time we are always pleased to have our house front the east, so that we can have cooler kitchens in the morning, and sit by the windows and doorways, or in our front yards in the afternoon. I know a beautiful house, with a generous piazza around three sides, but in summer afternoons, when the shade of the piazza is most desired, the sun blazes square upon the west side, and down the full length of both north and south sides. In this case the difficulty can be remedied by a screen of thick vines in front, at each end of the west side, so as to shade the north and south sides. Shade trees also will modify the situation.

Another most important consideration is your water privilege. Pure air alone will not save us

Fig. 1.—DIAGRAM OF CHAIRS AND SEAT.

from disease. We must have pure water and plenty of it. If plenty of soft water can be had by digging for it, you are fortunate. If you have cool spring water close at hand, you are in luck. You can depend upon cisterns of rain water if you live where rains are sufficiently frequent, and if neither you nor your near neighbors keep pigeons. These birds, (often called doves), sometimes soil the roof and eave-troughs to such an extent as to seriously damage the water gathered from the roof. It is a pity to have to depend alone upon cisterns, as these sometimes unexpectedly and most inconveniently fail from lack of rain, or from leaks, or from some pollution. But in a region where there is plenty of water in wells, it may be all hard, and therefore very uncomfortable for bathing and for laundry purposes. In such a case a cistern, though not the sole dependence, is a necessary appendage to the establishment.

One cannot afford to lay the foundations of a home regardless of the surrounding scenery. Beauty of view from the windows and doors is greatly to be desired. Without money and without price you can then have something better than the costliest paintings.

Doing the "Nothing."

"I should be glad to read it," said aunt L., "but I can't get time."—"I should think you might have considerable leisure," I replied, "you have a hired girl to do the work."—"Yes," she answerd, with a laugh, "the hired girl does the work, and I do the *nothing*, but my nothing keeps me as busy as her work keeps her, and is quite as hard."

This saying was beyond my comprehension, for I had then had no experience by which I could interpret it. Now I understand. My aunt had no small children, none too young to be "in business" somewhere. But there were three or four hired

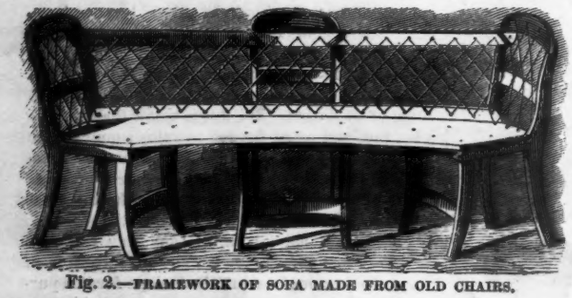


Fig. 2.—FRAMEWORK OF SOFA MADE FROM OLD CHAIRS.

men, and there was company coming and going, and sewing, and knitting, and darning, and the hunting for rags and strings when needed, the putting away of scattered articles, the oversight and direction of the whole in-door establishment.

I remember when I was first left to superintend the family work for a few days during my mother's absence, while I was yet in my teens. I did all that my mother had expected me to do, in the way of housework, and had considerable leisure for my own sewing and reading. I said to my father on the last evening before my mother came home, "I can't see what keeps mother so busy. She keeps step, step, stepping around the kitchen most all day, and here I have done all the work, and read a book through besides." Father laughed, for he knew what I did not think of then, (it was in my early school-ma'am days, when I knew very little about housework,) that I had had none of the big jobs of housekeeping to do, nothing but getting meals and keeping the house in order. When mother came home, her old habits were continued. She was trying out fat that I should have allowed to spoil, had she stayed longer away; jars of preserves were made or scalded over, feather beds were turned out to air, straw ticks emptied and washed and refilled, old chests of useful rubbish assorted, odd corners swept and dusted, and no end of tasks, both little and big, in addition to the regular daily and weekly work, which included those inevitable jobs of washing, ironing, baking, and scrubbing, which had not devolved upon me during her absence, and but little previously, as elder sisters took the brunt of the housework.

But I know now what it is to do the "nothing" for a family—know it so well that it seems to me that the task is too much for the farmer's wife of average health, who has three or four young children. Day before yesterday our stove was moved out of our sitting-room, and another one moved in, with some necessary change of pipe. It was a busy time of year, (June,) and I had put off the dirty and disagreeable task as long as possible. The work took longer and was more difficult than I had expected, and my sympathies were taxed a good deal for the "master of the house" who was hindered and wearied by it all—the more so, perhaps, because he entered upon it bravely, and endured it cheerfully. Afterwards he spoke of "wrestling with a stove-pipe" as very nerve-trying business—pipes are so hard to fit together or to pull apart, and slipping just when and where you least expected or desired them to. I said that I always felt great sympathy for men who had such work to do, but I thought how much it was in some respects like my own daily work.

To-day I have been unusually tired, perhaps, by the amount of "nothing" I have performed—work which has no name, and does not seem to count. I have done no cooking or cleaning, or other *regular* work, but at ten o'clock I was so tired that I thought I would like to rest all day. Why do children lose their hats and misplace their shoes? Why do two-year-old babies make themselves so busy in putting things out of place, spilling their bread and milk, and meddling with your papers? Why cannot children who are elated with the prospect of a pleasant excursion, bear their joy with dignified composure? You may try to be calm and patient, and succeed as well as usual, in getting two children ready for a boat-ride across the lake and a trip of a mile or two on foot, to the "new store," but the business will prove tiresome to the average woman. They are very happy, but happiness quickens the activity of a boy's limbs and tongue to quite an unnecessary degree, and he can hardly hold still to have his hair parted or his collar buttoned. A little girl waits for you to sew a ruffle in her new frock, and baby clings to you, calling, "I want to go 'way off too. I want to go too. Wash my face. Take me. Take me"—and every other request by which he hopes to get numbered with the party going "way off." Another child got up late, and has not had enough breakfast, and wants you to tie her shoes, as she tells you every two minutes. You have a list of purchases to make out for your little errand boy to take with him, and letters to sign and seal and address for him to mail,—and baby has the portmonnaie which is one of his big brother's greatest treasures, and one that he likes an opportunity to use. You take the portmonnaie away from baby, and put it so securely beyond reach that, after a quarter of an hour's vigorous search by yourself and children, it cannot be found, and your own pocket-book must go instead. The baby has been examining your letters, and did he take anything out or exchange the contents of the unsealed envelopes? All this time you have not decided what the hired girl shall get for dinner, and you know that as soon as she has the morning work done up, she will ask what she shall do now, as it is Thursday, with no regular filling in between breakfast and dinner work. You must take time to consider whether she had better rip up that mattress and wash the hair to-day. The children want a basin to bail out the boat, and the sun shines so hot you hunt up a big parasol for your little girl with the turned up hat-brim, and promise her two cents when she gets home if she brings the old parasol back safe. You follow them to the lake to make a change in the boy's clothing, it is coming off so much warmer than you expected. Then you go back and send the hired girl down with a flour sack in whick the various packages are to be put, and slung over the boy's shoulder on his homeward way. At last you are ready to tie four-year-old's shoes, but it is now so warm that she can go barefoot. "Take me, take me," pleads the big baby, who waked earlier than usual this morning, and got up before he was sufficiently awake. As soon as you take him he wants a cup of milk, and when you have "byed" him almost to sleep,

Fig. 3.—SOFA MADE FROM OLD CHAIRS—COMPLETED.

in rushes Four-year-old with such a lively story about the hens she has been feeding, that your work for baby is all undone. And so it goes. Such was my experience to-day, with the added anxiety of knowing that it was "now or never" with "Home Topics" for this month. While I got very tired with doing my "nothing," the hired girl was doing the work which can be done with little exercise of mind and nerve—dish-washing, sweeping, bed-making. Still, I did not envy her, nor do I ever envy the childless women, but I want it more generally understood and appreciated that *mothers who take care of their own children have work enough to employ their time and nervous force, if they have no other work depending upon them.* Observe the word "*depending*," for they may be able and glad to do more. Only the ill-informed or cruelly-disposed will sneer at the feeble health or "nervousness" of women, so long as they are so unmercifully "weighted" in the performance of duties peculiar to their sex, (as, for instance, the nurture of young children), by cares and labors which do not rightly belong to one sex more than another. No subject is more important than the domestic problem—how to promote happy homes for human beings, homes which are comfortable for all the members. Many suppose that money is the great thing needful, but wealth alone will not solve the problem—will not ensure a housekeeper suitable help in her duties, or give a mother the necessary command of time and resources for such primary education of her children as the age seems to demand. Greater simplicity in dress and house appointments, and manner of living, would considerably mitigate the lot of most women. But the hardest-pushed among us cannot serve our race and our Maker better than to make the best of our situation, and endure present trials patiently, while we speak honestly what seems Truth to us, and wait for light and leading from above.

A Gook Recipe, with Variations.

In Marion Harland's book we find the following:

"*Baked Hominy.*—To a cupful of cold boiled hominy, (small kind), allow two cups of milk, a heaping teaspoonful of butter, a teaspoonful of white sugar, a little salt, and three eggs. Beat the eggs very light, yolks and whites separately. Work the yolks first into the hominy, alternately with the butter. When thoroughly mixed, put in sugar and salt, and go on beating while you soften the batter gradually with the milk. Be careful to leave no lumps in the hominy. Lastly stir in the whites, and bake in a buttered pudding-dish until light, firm, and delicately browned. May be eaten as a desert, but it is a delightful vegetable, and the best substitute that can be devised for green corn pudding."

This is indeed a "delightful vegetable," prepared exactly as the author directs, but you don't often have the cold hominy, perhaps, or you cannot always spare eggs in the prescribed proportion. Baked hominy has become one of our most common dinner dishes, but it is seldom real hominy that goes in. Oatmeal mush, graniola, cracked wheat, cold boiled rice—any of those rather coarse farinaceous preparations, even good corn-meal pudding—all serve well in this recipe instead of hominy. Cracked wheat is preferred to hominy by some at our table. If you leave out the butter no one will miss it, and if two or three times the amount of hominy or mush goes with the "three eggs," and somewhat more than "two cups" of milk, it is still an excellent dish. The exact recipe makes it a sort of hominy custard in appearance, but it is still an excellent pudding with a smaller proportion of eggs. Of course it could be baked without any eggs, (as good rice puddings are), using more mush and less milk in proportion, so you can make it rich or plain, as suits your convenience. If you use a cupful of sugar with nutmeg or cinnamon, what have you but a good, baked, sweet pudding?

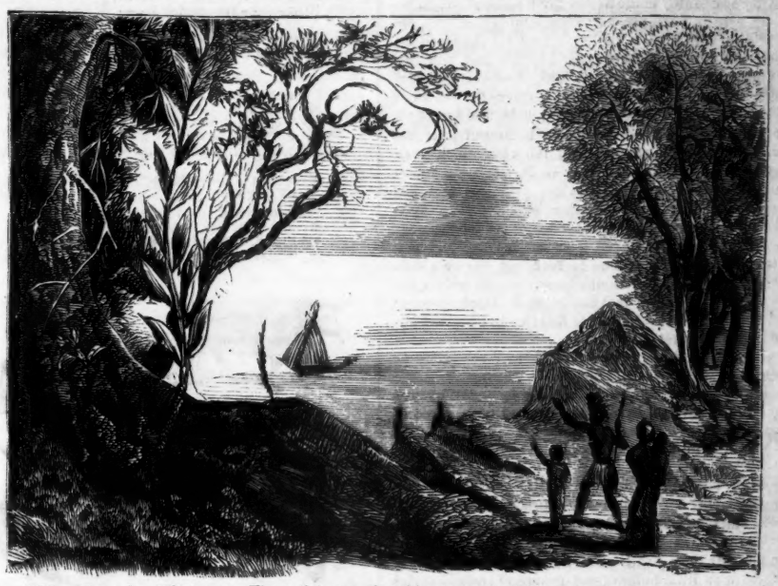
Home-made Furniture.—A Sofa from Old Chairs.

We are indebted to the lady whose design for extending a bureau we published two months ago, for the idea of constructing a sofa from three old chairs. The manner of doing this is so plainly shown in the engravings that but little description is required. The manner of placing the chairs, and the shape of the plank which is to connect them and form the seat, are shown in the diagram, figure 1. The plank is to be firmly fastened to the chairs with a sufficient number of long and strong screws; the front edge of the plank should be worked out in the form shown in the diagram. To make the back of the sofa, two strips (spruce will answer), ¾ inch thick and 2½ inches wide, are required; these have holes bored near one edge, about 3 in. apart, and one is screwed, lashed, or otherwise fastened near the seats, and the other near the tops of the chairs. Strong twine is then run through the holes in these slats, to form a net-work, as shown in figure 2; this should be pulled very tight, and may be kept so by driving a plug into a hole here and there, to jam hard against the twine. The frame-work may be made in this way at a very little expense; the cushions may be made to cost more or less, according to the material used in stuffing them, and the covering. The finished sofa is represented in figure 3. See engravings on p. 304.

GINGER SNAPS.—By Mrs. C. B., Homer, Wis. Butter and sugar 1 cup each, rub together; add boiling molasses 1 pint, saleratus ½ teaspoonful, ginger one tablespoonful. Other spices to taste; flour enough to make it stiff. Let stand until cold, roll thin, cut out and bake quickly. Then spread them in a colander or sieve, and stand for a while in a warm place, to make them crisp.... ANOTHER.—Mrs. "G. L. J.," who omits her address, says: Flour 2 lbs., butter ¼ lb., sugar ¼ lb.; ginger 1 tablespoonful; cinnamon 1 teaspoonful; soda ½ teaspoonful. Molasses a sufficient quantity. Rub the butter with the sugar and other ingredients, and mix with as much molasses as will make a stiff dough; knead well, roll into very thin sheets, cut with a round cutter, place on slightly buttered pans, and bake in a quick oven. Keep in a covered jar in a dry place.

MOULD IN CANNED FRUIT.—"M. L. W.," Boston, finds that mould appears on the top of some of the canned fruit, wishes to know the cause, and how it may be prevented another season. The *cause* of mould is the same as the "cause" of a pumpkin vine. In the case of the vine we plant a large germ or seed that we can see, and we can understand why the vine appears. Mould is just as much a plant as the vine, but the germs, or what serves as seeds, are so small that they can plant themselves without our seeing them; they may be carried in the air, or they may have been with the fruit, which was not sufficiently cooked to kill them. We have never known mould in fruit jars to do any injury; it does not indicate that fermentation has taken place; and if carefully removed, the contents of the jar are in good condition. As to prevention, we would suggest filling up the jars so as to have as little air space as possible, and covering as quickly as may be, in order that the surface may not be exposed to the air any longer than necessary. The occurence of mould in some jars, and not in others, would show that a difference in handling them had something to do with it.

MOTHS IN CARPETS.—Mrs. "S. T. W." has tried salt and various other applications, and still the insects trouble her carpets. We advise her to try the plan proposed by Prof. A. J. Cook, in his report on Injurious Insects. He advises to take a wet sheet or other cloth, lay it upon the carpet, and then go over the wet cloth with a hot flat iron; the steam thus produced will penetrate the carpet, and not only destroy living moths, but cook their eggs, and prevent them from hatching. It is cheap and easy of application, and we have no doubt that it will prove effective. The only wonder is, that no one has thought of it before.



No. 454. Puzzle Picture.—The artist says that this represents Indians viewing the face of the country. The Indians are plain enough; the face of the country is much diversified, but very striking when you see it.

BOYS & GIRLS' COLUMNS.

John Gilpin's Ride Illustrated.

"Who was John Gilpin?" you will no doubt ask, and "Where did he ride?"—Probably the history of no one was better known to your grandparents, if not to your parents, and the boys and girls of 50 years ago could repeat the whole of his "Diverting History," which was written in amusing verse by the poet Cowper, though most of his writings were serious and sad. We are told that "John Gilpin was a citizen of credit and renown," his "renown" is to be still greater, for though his history is preserved in Cowper's poem, he is now to be still more famous by having his wonderful ride illustrated by thousands of boys and girls all over this country, and no doubt in other countries. Mr. Crandall, who is always contriving some clever toy, has now taken John Gilpin in hand on this Centennial year. There are John and his horse, and as you read the poem you can put the two in position to illustrate the ride. The Publishers tell all about it on 3d cover page. The poet concludes the history by saying, "And when he next doth ride abroad, may I be there to see."—Unfortunately Cowper did not live in our day, or he could have seen Gilpin taking rides the like of which his poet's fancy never conceived. Who but Crandall would ever have thought of illustrating Cowper, and making fun for boys and girls at the same time?

How Kitty Went Blackberrying.

BY LILA P. NORTH.

"Div me more! Div me more, Susie!" cried Kitty, holding open her little mouth, all purple with blackberry juice.

"Oh, Kitty! I can't find any more; the boys have eaten them all off these bushes. Besides, there's the dinner bell, we must go back to the house," said Susie, taking her little sister's hand, and starting down the hill.

Now Kitty loved blackberries dearly, and was dreadfully disappointed that Susie had not found more among the bushes by the old stone wall, and her little heart was so full of grief that some of it ran out of her eyes, as she stumbled over the grass, sobbing out, "Oh, Susie! you're a dreffful, dreffful bad dirl; you said you'd det me lots and lots, now I tan't love you any more, Susie!"

"What's the matter with my little Kitty?" asked Mr. Riley, coming out from the back porch, where he had been trying to wash the red from his hot face.

"Why, father, she's crying because I didn't get her but a few blackberries by the old stone fence, and I found all I could, father!" cried Susie, indignantly.

No. 455. A Patriotic Rebus, which gives the name of something dear to all Americans, as a place celebrated in our revolutionary history.

"My little girl you must not cry," said Mr. Riley, as he lifted Kitty into her high chair at the dinner-table, "I know where there are plenty of blackberries up in the wood-lot, and you and Susie can go there after dinner."

Kitty's sunshiny smile at this dried all the tears in her brown eyes in a minute, and when dinner was over, she and Susie, with each a basket, set off for the wood-lot. There was the corn field to pass through first, and that was hard walking for Kitty's little four-year-old feet, and then they came to the rye field, where the rye stood high above her head, then the turnip field, and last of all, the wood-lot, with its hickory and butternut trees, the brook down in the bottom, and the cave which Susie used to think must have a bear in it, when she was as small as Kitty. But Susie was ten years old now, and knew there were no bears anywhere near except in cages. All along the fence and in the edge of the woods, were the bushes, and "lots and lots" of berries, and now Kitty did not need any one to feed her, her own little hands could keep her mouth busy. It was only when she could eat no more that she began to think how hot and tired she was, and how her little basket had not one blackberry in it yet.

"I dess you can det *my* bakset full too," she called to Susie, who was busily picking.

"Let me see," said Susie, coming up. "Why you lazy little thing, you haven't got any. I wish I hadn't brought you."

"I want to do home," announced Kitty, abruptly.

"Well, you can go alone, I've got to pick berries," said her sister, beginning work again. Kitty stood swinging her sun-bonnet and shaking her curls indignantly for a while, and then walked off.

"I'll dit lost, and fighten bad Susie," she thought in her naughty little heart. The wood-lot was very large, covered with little hollows and groups of trees—besides the great wood where the brook ran. Kitty was soon lost to sight behind one of these clumps of trees, and when after some time, Susie looked up from her work, she could see nothing of her. She went to the bars and looked through the fields toward the house. Nothing was seen of Kitty, and supposing she had really gone home, Susie went back, filled her own basket, and Kitty's too, and then started home. On her way through the turnip-field she spied her father and the men making the new pond in Mr. Wheeler's farm, and Susie resolved to go over and look on. So she crossed the fields, and setting the berries under a tree, soon forgot everything else in watching them letting on the water. It was half-past six before the men were through, Susie and her father went home together. "Where's Kitty," he asked, as they walked along.—"Oh! she got tired and went home long ago," said Susie. When they reached the house Mrs. Riley came out to meet them. "How long you have been gone, Susie!" she said. "Where's Kitty?"

"Why—she came home hours ago," cried Susie, in surprise. "She wouldn't pick berries."—"Oh! James, the child is lost," exclaimed Mrs. Riley, in alarm, "how could you let her come alone, Susie?

Poor Susie did not know what to say, she had not thought of any danger to Kitty, and when she saw her father and Sam, the hired man, start up through the fields to look for her little sister, she felt as if she must go too. But her mother would not let her go. It seemed as though a week had passed by, to Susie and her mother, when at last, when it was nearly eight o'clock, they saw Mr. Riley and Sam coming down the hill, and yes! Mr. Riley carried Kitty in his arms. The tired little girl was fast asleep, and her mother wept tears of joy as she took her in her arms and kissed the little stained face again and again. The kisses woke Kitty from her nap, which she had been taking for hours away down in the woods. "What's this tied up in your apron?" said her mother.—"It's some berries for you, mamma, I dot 'em all myself, tause the bakset was so big." There in a corner of the little apron was a mass of berries, mashed and squeesed until the juice had run way down to Kitty's feet, but Mrs. Riley thanked her all the same, not for the blackberries, but for the love which went with them. But Kitty thought it was for the blackberries.

Aunt Sue's Puzzle-Box.

DOUBLE ACROSTIC.

Primals and finals each will name
A very pretty flower.
The first grows wild in field or lane,
The last, by garden bower.

1—First name a gentle lady,
2—And then a gentleman,
3—And now a place of ingress,
4—And now a mighty plain:
5—And then please take a pronoun,
Be sure it isn't "ours,"
And straightway get the titles
Of the two pretty flowers. ITALIAN BOY.

CONCEALED SQUARE WORD.

I have seen actions which appeared noble, but were open to objection. I treasure in my heart, nevertheless, many a kindness done for me, although at last made conscious that the motive was a crafty one. On the contrary, a good deed may be done in an unfortunate style, so do not judge by appearances. XIPP.

TRANSPOSITIONS.

(Fill the four following blanks with the same word variously transposed.)

How ——— the gentle ———
As they browse beside the stream.
How savory the ———
Which my ——— and I did eat. BESSIE BENNETT.

NUMERICAL ENIGMAS.

1. I am composed of 14 letters:
My 14, 8, 4, 5, 9, is a number.
My 2, 12, 13, 6, is a metal.
My 3, 11, 5, 6, is a boy's nickname.
My 7, 1, 10, is a game with which all children are familiar.
My whole is the name and title of one of the kings of England. E. M. LILLIBRIDGE.

2. I am composed of 11 letters:
My 3, 2, 1, 4, 7, 5, is used in making picture frames.
My 6, 5, 8, 9, 10, 11, is part of a harness.
My whole is a good maxim. W. E. H.

DECAPITATIONS.

1. Behead a European city, and leave "above."
2. Behead an Asiatic city, and leave a home of wild beasts.
3. Behead an animal, and leave part of the body.
4. Behead part of a wagon, and leave part of the body.
5. Behead a fish, and leave an animal. ISOLA.

NAMES OF POETS.

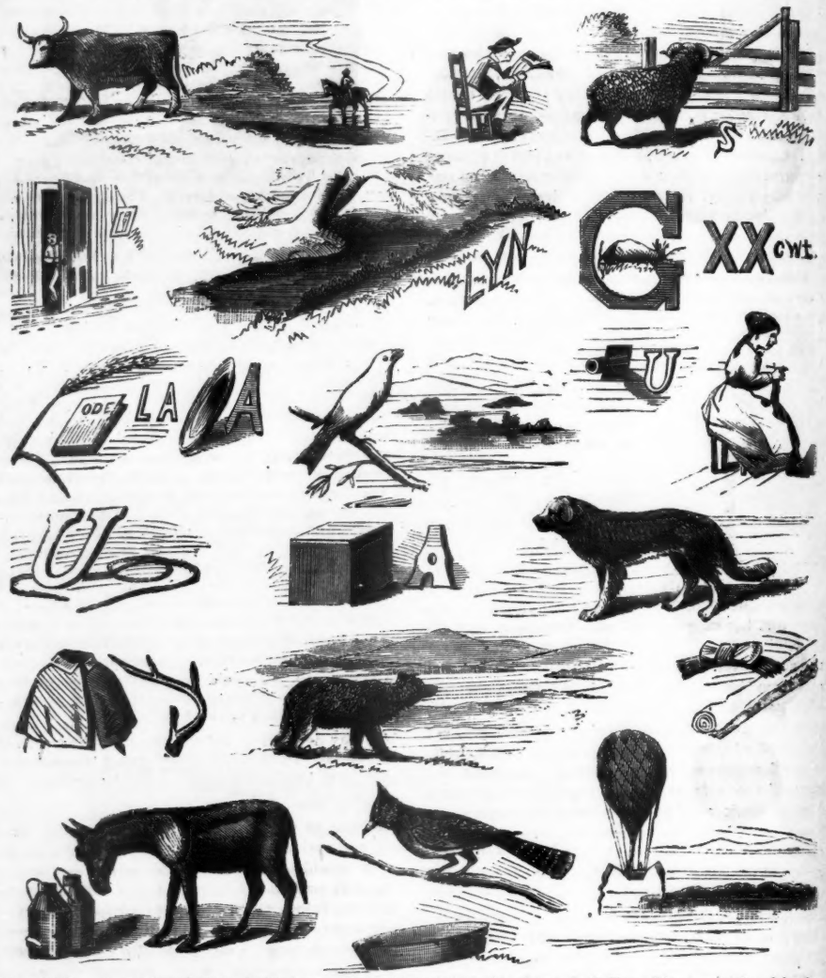
1. A river in Italy. 2. One of the tribes of Israel and a beverage. 3. Part of a dollar and the prevailing fashion. 4. Not old. 5. Very rapid. M. P.

PUZZLE.

With part of a pill, a bit of mud, a taste of candy, and a portion of wine and of gin, make something nice to eat. SNIP.

HIDDEN FLOWERS.

1. In grammar, the verb enables us to give expression to words. 2. We all know, Ida, Don is a Spanish title; also the name of a river in Russia. 3. There is the church with its glittering spire, and fine architecture. 4. In China, Eli, "lys" is a measure equal to 633 yards. 5. Do not detain me, Levi, O! let me go. SPHINX.



No. 456. A Geographical Rebus.—You will find here 18 places, including cities, countries, islands, and other localities that those who have studied geography should know all about.

PI.

A shore tib shi stream,
Who mace ti ot saps?
Eh dreah het dogo norsap yas
"Lal shelf si sargs." C. A. SPROAT.

DIAMOND PUZZLE.

1. Part of a sofa. 2. A texture made of sedge, straw, or other material. 3. A miserable person. 4. A tyrant. 5. Tinge. 6. To bring to corruption. 7. May be seen in the moon. XERYION.

CROSS WORD.

My first is in teacher but not in school,
My next is in horse but not in mule,
My third is in hog but not in pen,
My fourth is in pullet but not in hen,
My fifth is in stop but not in balk,
My sixth is in crow but not in hawk,
My seventh is in spruce but not in yew,
My eighth is in green but not in blue,
And now if one or two guesses you'll give
You perhaps can tell the place where I live. W. M. I.

ANAGRAMS.

1. Do send cab.
2. I ate lobster.
3. Saphire cornet.
4. O nice base.
5. A dirty 'bus.
6. Soil on a tub.
7. Dry cat's table.
8. Hit clean cities.
9. Made tin coil.
10. See Mag's slab.

ANSWERS TO PUZZLES IN THE JUNE NUMBER.

BEHEADED RHYMES.—1. Sled, led, Ed. 2. Sprat, Prat, rat. 3. Strip, trip, rip. 4. Shark, hark, ark. 5. Plate, late, ate. 6. Scold, cold, old. 7. Smart, mart, art. 8. Scream, cream, ream.

NUMERICAL ENIGMA.—Shakspeare.

CROSS WORD.—William Cullen Bryant,

PI.—If every pain and care we feel
Were written on the brow,
How many a hand would pause to heal,
That only wounds us now.

ACROSTICAL ARITHMOREM. Madrid, Thames.

M— alle —T
A— mbus —H
D— at —A
R— oa —M
I —mmens—E
D— ome —S

DIAMOND PUZZLE. Happiness.

H
H A T
R E P E L
T R A P P E D
H A P P I N E S S
P E N N I E S
T H E M E
A S S
S

ANAGRAMS OF VERY ANCIENT CITIES.

1. Hecatompylos.
2. Cecropia (Athens).
3. Persepolis.
4. Orontem (once Antioch).
5. Ninus (the Nineveh of the Bible).
6. Carthage.

ANSWERS TO 452.

1. Fall—*all*.
2. Wheel—*heel*.
3. Bend (of the river)—*end*.
4. Mill—*ill*.
5. Cloud—*loud*.
6. Boat—*oat*.
7. Flag—*lag*.
8. Bridge—*ridge*.
9. Boat—*boa*.
10. Bend—*Ben*.
11. River—*rive*.
12. Barrow—*arrow*.

Thanks, for puzzles, letters, etc., to Robert J. D., Annie F., A. B. S., J. A. M. (what *is* "Santiegar"?) A. M. B., F., Niel Lee, Sadie E., C. W. St., Jennie Van A., May, L. M., L. H. R., and Charlie.

Send communications intended for Aunt Sue, to Box 111, *P. O., Brooklyn, N. Y.*, and *not* to 245 Broadway.

Aunt Sue's Chats.

M. J. D.—A very pretty "toy for the baby" may be made with three knitted balls attached to a rubber teething-ring by cords. Set up about 20 stitches on a steel needle, say of blue worsted. Knit about 20 rows of plain knitting; then join on some red worsted, and knit 20 rows of that; then finish it off. Join the ends together; gather one side, and fasten it (sew it together). Stuff it

Fig. 1.—BALL.

Fig. 2.—BALL.

with raw cotton; then gather the other side, and fasten that off (having first fastened in a cord, made of colored worsted, to hang it up by; let the cord be three fingers long, and fasten the other end of the cord into the next ball you make). Now, with some white worsted (and a worsted needle) work a star (see fig. 1) from the center of the ball around the cord, three stitches (of "single zephyr") in each point. On the sides of the ball work four stars (fig. 2). Where the blue worsted joins the red, work a black star (one stitch in each point), and a little round spot of yellow worsted in the center. In the center of the red side, work a blue star with yellow center, and in the center of the blue side, a red star with yellow center. Now fasten a little toy sleigh-bell at the bottom of the ball (as seen in fig. 2), and one ball is completed. Of course you can select your own colors, but I have been particular to describe the foregoing, as a set of balls now hangs near me so exceedingly pretty, that I should copy it exactly. The other two balls are pink and green (with a green star in the pink worsted, and a pink one in the green; a black star where the two colors join), and black and yellow; the latter worked with red and white stars. Now fasten the balls to the rubber-ring, letting them hang in different lengths, as in figure 3, and the baby will be delighted with the effect.

Fig. 3.—TOY.

FREDDIE wants me to suggest "a name for his dog" (a "puppy"). I can give you a few names which occur to me, Freddie, and you can take your choice; but I should not like to take the responsibility of naming him myself. In our own family we have had dogs named Snap, Duke, Billie, Jack, Bang, Peggie, Dot, Pinkie, Nellie, and Ned. Then there are Dash, Rover, Carlo, Sport, Snip, Jip, Tot, Major, Don, Boz, Wolf, Hector, Nero, Cæsar, Crab, Nemo, Lion, Bounce, Dick, Prince, Leo, and lots of others, not forgetting "Schneider."

HELEN F. W. wants to know "why hypocritical tears are called 'crocodile tears.'" As long ago as the time of Herodotus (four hundred years before Christ) there existed a fabulous legend as to the crocodile's ability to snare unwary travelers by certain cries, and that it also shed tears. Shakespeare refers to the cries when he says

——"as the mournful crocodile
with sorrow snares relenting passengers."

And of the tears of "this most deceitful of animals," an old writer (1616) says—"It is written that he will weepe over a man's head when he hath devoured the body, and will then eat up the head too. Wherefore crocodiles teares signifie such teares as are feigned and spent only with intent to deceive or do harm."

MAY.—To "transfer initials" or other embroidery from muslin or cambric, you must cut it from the original fabric, leaving no margin. Then baste it upon the material to which you wish to transfer it, and hem it around all the edges, very neatly, with a fine needle and thread.

FANNIE CLARK (to whom we are much obliged) suggests something better than the fine tooth-comb for spatter-work. She says: "I have had pretty good success in making spatter-work, and I use a sieve; any little wire or tin sieve will do. Hold it over your work and rub the brush across it gently. It makes the spatters much finer. Every one who has tried this way likes it much the best."

L. J. S. asks how to press and preserve ferns. Make books of your old newspapers, by doubling them, pinning them at the back, and then cutting the edges, leaving them about the size of the *American Agriculturist*. Don't pick the ferns and bring them home to your "books," but take the books to them, and place each fern as soon as it is plucked between the leaves of the book. Examine them daily for a week or ten days after gathering, and each time that you look at a fern, take it from its old place and put it in a new dry one. An old music-book is very nice for the purpose. The oftener you change the ferns to dry places in the books, the better they will keep. Place them under a moderate weight all the time they are drying; a couple of flat-irons would be enough for one music-book. Two or three months after gathering the ferns, you can wax them if you choose. To do this, you will need a piece of white wax. Put a folded newspaper on your ironing table, and place your fern upon it; rub a warm (not hot) flat-iron with the wax, pass the iron quickly all over the fern on one side, then turn it and iron the other side. Experience will teach you how much wax to use.

GERTIE L. B. asks me to tell her how the word "slang" originated. An old work, called "A New Dictionary of Sportsman's Slang, etc.," derives it from *slang*, which is the old word for which we now use *slung*. ....*Slangs* were the irons worn by prisoners, and so called from their being *slung*, or suspended by a cord, from the waist, to enable the wearer to move about. The *irons* were the *slangs*; the wearer's language was naturally "slangy," *i. e.*, partaking of the nature of their condition—convicts in *slangs*. Hence, at length came the noun *slang*....A more fanciful account, but I think less likely to be the correct one, says that "slang" comes from an old Dutch General, *Slangerberg*, who commanded some English, or allied Dutch troops under Queen Anne, and who was notorious for his use of bad words, especially when speaking of the Duke of Marlborough, for which he was afterward removed from command. J. Van Lennep, a well-known Dutch writer, agrees with this and thinks Slangenberg was known as "Old Slang," and hence the present word for low language; he says the sailors in the Dutch navy, even now say of a soldier "Let is een *slang*," (a soldier); just as London boys say of one of their "red-coated" soldiers, "there goes a lobster." So, little Gertie, you can take your choice of these accounts. If any one can give us more certain information, we shall be glad to get it.

THANKS for letters, puzzles, etc., to Beatrice, Mrs. M., E. C. G., (I will endeavor to send you a catalogue from which you can select patterns), F. S. W., Charlie, T. Tray, Libbie, and Mary A. E.

To those correspondents who say "please let me know if my answers are correct," I would say, that, even if they had the courtesy to enclose a postage stamp for the reply, I should not have time to answer each one personally, and that if they wait until the answers are published, they will be able to judge for themselves.

To those who ask agricultural questions, and address me as "Dear Sir," I would state that I am not a "Sir," and cannot give instruction on "grafting-wax," or kindred subjects. Such questions should go to the editors.

The Doctor's Talks—About Iron and Steel.

Here comes from Alabama a question from "one of the boys," "W. F. H.," for which he wishes an answer in our "next." It is very rarely that an answer can come in the "next," as that paper is usually being printed at the time such requests come. All such questions are welcome, but I must take my own time about answering them. But I haven't yet stated the question, which is: "What is the difference between Wrought and Cast Iron, and as I am one of the boys, I want to know the difference between Iron and Steel."—A very sensible question, and sensibly put, and I like to know that the boys take an interest in these common things of every day use. Many people are content to know that iron is good for some uses, and steel for others, but never think to ask what is the difference. It is very difficult to answer this question in such a way that young people will understand it. If my young friends knew just a little about chemistry, I could give them a very short and clear answer, but unfortunately that is something that not many old people understand, and we can't expect that youngsters will know much about it. Iron is an element.—Now I have to stop just here, and explain that an element is a substance, that no one has ever been able to separate into two or more substances. Salt is not an element, for it can be broken up into a greenish suffocating gas (*chlorine*), and a metal as bright as silver (*sodium*). Water is not an element, for that is easily split up into two gases, *hydrogen* and *oxygen*, and so with most of the things which surround us; they are mainly made up of other things. But no one has yet been able to show that chlorine or sodium, oxygen or hydrogen, can be divided up into any other substances, so these are called simple bodies, or elements. Thus far 63 of these elements have been discovered, many of which are very rare. Every substance about us, everything that we see, feel, or use in any way—all matter—is made up of one or more of these 63 elements. Iron—*pure iron*—is one of these elements, and you may be sure a very important one, but before I can go on with the story about that, there is another thing that I must tell you. I have already hinted that these elements united with one another—mind I don't say that they mix, but they come together and form a substance quite different from either by itself. Two or more elements may combine, but we will now talk about only two. Take the case of common salt already mentioned. It is hard and brittle, and when pure as clear as glass, but as you see it, it is dead white, just as pounded ice is dead white; then salt is pleasant to the taste, and instead of being injurious, is healthful; when put into the fire, it will not burn. Now you must take my word for it that this very common article, which we daily use, is made up of two elements, chlorine, a green gas that would shortly kill you should you breathe it, and a silver white metal, almost as soft as tallow, and if you were to drop a piece of it into hot water, it would take fire and burn with a bright yellow flame. You see from this that the compound—salt—is very different from its elements, chlorine and sodium. So with water, the liquid we know so well, its two elements are only known as gases, one of which, hydrogen, burns the moment it is touched by a light, and the other, oxygen, is quite unlike that, and both as different from water as can well be. Now one more example of this fact, that the compound is unlike the elements that are in it. You wish for some nails, and can not find the nail-box; after a while you remember that you left the box where you were mending the chicken house, or dog kennel, a few days ago. You go for the neglected nails, and find them covered with a brownish powder, which comes off upon your fingers as you handle them. You say that the nails have rusted; but what is this rust? It is not something that has fallen upon the nails; it is the iron itself, with something else. The iron is one element, and it has united with another element, oxygen, of which there is a great abundance in the air, and in the water which fell as dew upon the nails. But how unlike is the rust to the iron of the nails, and just as unlike the oxygen, an invisible gas. You have no doubt found a piece of iron that has been buried for a long time, that was so rusted that the rust would break off in brittle scales. Rust being iron and oxygen, is called oxide of iron. This oxide of iron is found in great quantities in some places, and is one of the valuable ores from which iron is made. It is not then called iron rust, but that is what it really is—oxygen and iron—but it is found of different colors, and some much harder than others, and while some are exactly like iron rust, others are mixed with other elements. Now, to talk about iron, we have got down to the starting point—iron ore. No doubt some of you have seen some kinds of iron-stone, as it is often called; one of the best kinds is dark brown, but when scratched with a file shows a yellowish brown powder, much like rust; it is brittle, and as unlike iron as any other stone, though it contains more than half its weight of pure iron. In this form of oxide of iron, or rust, iron is found almost everywhere; it is in the soil, and in plants, and is also found in our bodies. But iron is not always found united with oxygen; a common mineral, which is iron and sulphur together, has a shining appearance, and is yellow. So many people have supposed it to be gold, that it is known as "Fool's Gold." In these and other forms iron is found abundantly, all over the world, but though these contain iron, they are not iron in the useful state, such as we know in the many household articles, farm implements, and the hundreds of other uses to which it is put. Iron separated from other substances, is metallic iron; when it is united with other elements, such as oxygen, sulphur and others, it is an iron mineral, which, when abundant enough to yield much iron, is called an iron ore. Iron in the metallic state, *i. e.*, so pure that it may be used, is exceedingly rare, in nature, even much more so than gold. Large masses of it have been found which have fallen to the earth. You have no doubt read of meteorites, which are sometimes seen to rush through the air like a shooting star, and to strike the earth. Some of these meteorites are nearly pure iron; I once saw in a blacksmith's shop in Mexico, one of these meteorites in use as an anvil, and there are others in Mexico and South America much larger. But iron in this form is very rare, and the first that was used had to be obtained from some iron

CHILDREN EATING MACCARONI IN THE STREETS OF NAPLES.

stone or ore. The operation of separating metals from their ores is called reducing. This iron-stone that I first mentioned, the oxide of iron, is the most easily reduced of all. Here in this ore you have iron and oxygen, and to get the iron by itself, we must get rid of the oxygen; to do this we must present to the oxygen something that, so to speak, it likes better than it does the iron. To reduce this ore, we must take the oxygen away, and this is done by offering it carbon; at a high heat the oxygen will unite with the carbon, to form carbonic acid, an invisible gas, and the iron being left to itself will melt and run. You will ask how the carbon is to be got. Charcoal is nearly pure carbon, and wood and mineral coal consist largely of the element, carbon. Iron was known in early times, and the history of its introduction is lost. There is a tradition that some 1500 years B. C., the burning of a forest reduced the iron that was in the iron stones there, and thus gave the hint for the first iron manufacture. Iron is procured in India at the present day by a very rude process. A rough furnace is made of clay and filled with broken iron-stone, and charcoal; the fire being lighted, a blast of air from a rude bellows, made of skins, is forced in at the bottom of the furnace; when the coal is all burned out, the clay furnace is broken, and a lump of iron weighing a few pounds, is obtained. Our iron furnaces are tall iron cylinders lined with fire brick, into the bottom of which passes a powerful blast of air forced by a steam engine; the iron ore and stone-coal are put in at the top of the furnace, and at the proper times the melted iron is drawn off below, allowed to run into molds or troughs of sand, where it cools. The iron ore and coal are added as often as needed, and the work goes on day and night, month after month, without letting the fire go down. The iron as it runs from these furnaces is cast iron. It has taken so long to tell you how iron is first obtained, that I must wait until another month before I can describe the difference between the different kinds of iron, and between these and steel.

THE DOCTOR.

The Maccaroni Eaters.

In warm countries the people live much more out of doors than we do, and their food is much simpler than ours. In these countries people live largely upon fruit, using it as food, and not as we do, as a luxury. The poorer people in such countries rarely get meat, and seem to do quite well without it. In Mexico, where railroads and telegraphs are almost unknown, and stage coaches are rare, the mail, when it goes at all, is carried on horseback, and if one wishes to send a special message, he must employ a runner, or *correro*. These men, with only a shirt and pantaloons of cotton cloth, and leather sandals on their feet, travel for several days on a sort of jog trot, and carry their food with them. All that they take is a small bag of *pinole* and a gourd-shell for a cup. Pinole is made of Indian corn roasted and ground into a a meal; this is mixed with some sugar and a little spice. When the runner finds water he can make a meal. He has only to stir enough pinole with water in his gourd-shell cup, to make a gruel; this he drinks, and his dinner is done. These runners do fatiguing work with no other food. In Mexico, the working people live largely upon corn in one shape or another, just as they do upon rice in China and other parts of the East. In Italy the food of the common people is Maccaroni. This is a paste made of flour and water, and dried in various forms. The wheat raised in that country has less starch than ours, and makes a very tough paste. By means of a machine, the paste is formed into quill-like pieces, like large pipe-stems, or it is sometimes merely rolled out thin, cut into strips and dried. This, when boiled, is in the shape of tough white strings, and is a very wholesome food. The Maccaroni sellers are to be found at almost every turn in Naples and other cities of Italy, and the poorer people live almost entirely upon Maccaroni and fruit. The engraving shows the manner in which it is eaten; the two street urchins are evidently enjoying it

Still Another Reduction.

Waltham Watches

At lower prices than ever before.

OUR REDUCED PRICE-LIST NOW READY.

We continue to send single Watches by Express to any place, no matter how remote, with bill to collect on delivery, with privilege to the purchaser to open the package and examine the Watch before paying, and with no obligation to take it unless it is perfectly satisfactory.

Write for the Price-List, which is sent free to all.

☞ *Mention in your letter or Postal Card that advertisement was seen in American Agriculturist.* Address

HOWARD & CO.,
No. 222 Fifth Avenue, New York.

(CIRCULAR.)

Consumers' Importing Tea Co.,
No, 8 Church Street,
P. O. Box 5,509. New York City.

This is a combination of capitalists to supply the consumers of Teas throughout the United States on the mutual principle

We have experienced agents in all the best districts of China and Japan to select Teas especially for our trade.

We expect every consumer of Teas to render us all the assistance they can in carrying out our enterprise, as we make a specialty of SUPPLYING CONSUMERS ONLY (and allow no middlemen to make any profit on our importations), which will enable us to supply them with Teas at prices lower than have ever been known, and of those fine qualities that seldom reach the interior, being sold only in the large cities and among the very wealthy.

Hoping the consumer will take an interest in our enterprise, and send at once for a circular with full explanations of how to proceed to obtain our goods, we remain,

Most respectfully yours,

Consumers' Importing Tea Co.,
No. 8 Church Street,
P. O. Box 5,509. New York City.

Entered, according to Act of Congress, in January, 1874, by the Consumers' Importing Tea Co., in the Office of the Librarian of Congress, Washington, D. C.

And Not Wear Out.

For sale by Watchmakers. By mail, 50 cents. Circulars free. *The American Agriculturist says:* "*We have* NEVER *found a watch it would not fit.*"
J. S. BIRCH, 37 Maiden Lane, New York.

STENCIL DIES For cutting business Stencils, all sizes. Also complete OUTFITS for Clothing Stencils and Key Checks, with which young men are making from $5 to $20 a day. Send for Catalogue and samples to S. M SPENCER, 347 Washington St., Boston, Mass.

5 MONTHS FREE. By sending $1.00 now for the Fruit Recorder & Cottage Gardener for 1877, you will get the last 5 months of this yr. *Free.* Specimen copies free to all applicants. Club agents should write us for our terms. Address
A. M. PURDY, Rochester, N. Y.

Bogardus's Patent Universal Eccentric Mills

for Grinding Bones, Pot Shells, Ores, Old Crucibles, Fire Clay, Guanos, Oil Cake, Feed, Corn and Cob, Tobacco, Snuff, Sugar, Salts, Roots, Spices, Coffee, Cocoanut, Tomatoes, Saw-dust, Flax Seed, Asbestos, Mica, Horn, etc., and whatever cannot be ground by other Mills. Also for Paints, Printers' Inks, Paste, Blacking, etc.

JOHN W. THOMSON, Successor to JAMES BOGARDUS,
Cor. White and Elm Sts., N. Y.

Self-Propelling Chairs For Cripples and Invalids

Can be *easily* propelled, either in or out doors, by any one having the use of hands

State your weight and send stamp for illustrated catalogue of different styles and prices.

Please mention this paper.

S. A. SMITH,
No. 32 Platt St., N. Y. City.

Established in 1843.

Agricultural Implements and Farm Machinery, Seeds, and Fertilizers.

A full assortment of the best standard, as well as of the latest improved kinds, constantly in stock and for sale by

R. H. ALLEN & CO.,
189 & 191 Water Street, (P. O. Box 376),
NEW YORK CITY.

THE NEW YORK PLOW CO.,
55 Beekman St., New York,
Manufacture **Family** Cider and Wine Mill, $20.00. Also **Union** Cider Mill; makes very soft adhesive pomace, better than grated. Turns easy. Price $25 & $35.
Cider Press Screws.
Presses and Grinders separate.
The Nishwitz Pulverizer is the best Wheel Harrow, drawing steady, don't clog, with and without pole.
The Adamant Plow, hard metal, more durable, and cheaper to repair than Steel Plows, runs steady, steers like a ship. Field Rollers reduced. Circulars free.

50,000 IRISH JUNIPERS.

From one to five feet. We can sell them cheaper than any other establishment in the United States. Send for price list.
TRUETT'S SONS & MORGAN,
Rosebank Nurseries, Nashville, Tenn.

EUROPEAN LARCH.

2-year Evergreen Tree Seedlings. One of the largest and best Stocks in the U. S. *Early* orders for Tree Seeds will have best attention. Correspondence solicited.
H. M. THOMPSON, St. Francis, Milwaukee Co., Wis.

ANDERSON'S
Sheep-Shearing and Horse-Clipping Machine,

now thoroughly perfected for both kinds of work, and also for clipping the wool from Pelts. It is operated by compressed air, conveyed from a rotary pump through a ⅜-in. rubber tube, 12 ft. long, to the machine. The pump is driven either by hand or power. I can furnish pumps of suitable size to drive from one to twenty machines. The machine cuts a swath 4 inches wide, and works very rapidly without any possibility of cutting the skin.

Send for circular. P. ANDERSON,
Patentee and Manufacturer, 321 E. 22nd St., New York.

INQUIRE FOR

W. A. BROWN & CO'S UMBRELLAS.

PHILADELPHIA and NEW YORK.

The qualities marked with their name are confidently recommended.

MICROSCOPES

Of all kinds and prices for *Colleges, Schools, Physicians and Families.* **MAGNIFYING GLASSES** for investigations in *Botany, Mineralogy, Horticulture, Agriculture, etc.* **LENSES, SPY GLASSES, TELESCOPES,** *etc.* 64 PAGE PRICE LIST, *fully illustrated, sent free.*
McALLISTER, *Mfg. Optician,* 49 NASSAU ST., N. Y.

EARTH CLOSETS!

The cheapest, best, and most simple in the market. Saving of life and health demand their use. They take the place of the Water Closet, which is an expensive luxury. Price, $10 to $20. Send for circular.
E. B. GRIFFING
No. 66 Courtlandt Street, New York.

THE CENTRAL PARK TEST.

NEW YORK, May 25th, 1876.

WAKEFIELD EARTH CLOSET CO.,
34 Dey Street, N. Y.

GENTLEMEN:
100 of your **WAKEFIELD CLOSETS** have been in use **four years** in Central Park. They have given *entire satisfaction.* We have ceased using the Water Closets which were *contaminating the water* of our lakes.
Respectfully,
JULIUS MUNCKWITZ.
Supt. D. P. P.

GRAND EXPOSITION HOTEL,
PHILADELPHIA, May 18, 1876.

GENTLEMEN: The fifty
CABINET CLOSETS
that you sent us give general satisfaction to our guests. We will send you an order shortly for as many more.
M. RILEY, Manager.

For further Testimonials and Descriptive Circulars send to
WAKEFIELD EARTH CLOSET CO.,
34 DEY STREET, N. Y.
Or, 900 Walnut Street, Philadelphia.

W. S. BLUNT'S

"UNIVERSAL FORCE PUMPS."

After six years endeavor to furnish the most reliable force pumps in the market, the above pumps are respectfully offered, as the best results, in my judgment, of the public requirements.

Their **adaptability, great power, careful finish** in detail, and consequent **economy,** will commend them. In case of accident, any part can be easily replaced, without sacrificing the whole pump. They can be immediately converted from **right** to **left-hand pumps,** by swiveling the air-chamber and handle to any required angle with the spout. They are changeable from lift to force pumps. Are for the house or for out-door wells of any depth, and having close tops, can not be tampered with.—**Also, Blunt's Sand Vacuum Chambers.**—A complete protection against sand or gritty water in **dug or driven wells, pits, mines, and rivers.** For **hand or steam pumps,** all sizes, from 1¼-inch to 4-inch suction pipe.

Sent for circulars to **NASON M'F'G CO.,**
71 Fulton and 71 Beekman St., New York.

ADAMANT

HARD METAL PLOW.

Adjustable to land. Scours in any soil. Costs less than steel, and is more economical to keep in repair. Circulars free. THE NEW YORK PLOW CO., 55 Beekman St., N. Y.

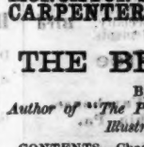
CHOICE WHITE WINTER WHEAT FOR SEED.

For rich, dry land, there is no better variety of winter wheat than the DIEHL. Try it. Price, including bags: Peck, $1.00; one bushel, $3.00; two bushels, $5.00, and any larger quantity at the same rate. Orders promptly filled. Address
JOSEPH HARRIS, Moreton Farm, Rochester, N. Y.

PEACH BUDS of Amsden's June, Alexander, Thurber, Steadly, and all the best market varieties, at lowest rates by the 100 or 1,000. Also a good stock of PEACH TREES of the leading market varieties, including the new, which are offered at lowest rates. DAVID BAIRD, Manalapan, N. J.

TIEMAN'S WASHING BLUE

for the laundry, put up in 1 lb. cans; 1 lb. of this blue will last an ordinary family two years. Price per lb., $1.25, saving the price of boxes, bottles, and labor, besides being the very best blue made. H. H. TIEMAN & CO., Depot, 56 Murray St., New York. Sent to any address on receipt of price.



Hussey's National Cottage Architecture.

New and Original Designs, Working Scale Drawings, and Details for all Styles of low-priced Houses, with Specifications and Cost. *Just published.* Royal quarto. Post-paid, $6.

WOODWARD'S NATIONAL ARCHITECT. 1,000 WORKING DRAWINGS, **Plans, Details,** Specifications, and Estimates. TWELVE DOLLARS, post-paid.

MONCKTON'S NATIONAL STAIR BUILDER. SIX DOLLARS, post-paid.

MONCKTON'S NATIONAL CARPENTER and JOINER. SIX DOLLARS, post-paid.

THE BRAHMA FOWL.

By LEWIS WRIGHT,
Author of "The Practical Poultry Keeper," and "The Illustrated Book of Poultry."

CONTENTS.—Chapter I. The Origin of Brahmas.—Chapter II. Economic Qualities and Management of the Brahma as a Stock Fowl.—Chapter III. Characteristics of Dark and Light Brahmas as Bred for Exhibition.—Chapter IV. The Practical Breeding, Rearing, and Management of Brahmas for Exhibition.—Chapter V. The Judging of Brahmas.

Elegantly Illustrated with numerous colored lithographs and wood cuts. PRICE, POST-PAID, $2.50.

Either of the above books sent post-paid on receipt of price by
ORANGE JUDD COMPANY, 245 Broadway, N. Y.

A COPPER BULL-RING,

2¼ inches in diameter, of the most approved pattern, with screw-driver for putting it together, will be sent, prepaid, on receipt of $1.00. Address
ORANGE JUDD COMPANY, 245 Broadway, N. Y.

Vegetable Seeds by Mail,

FOR SOWING IN AUGUST AND SEPTEMBER.

	Per oz.	Per lb.
RADISH, New California White Winter—solid, crisp, a good keeper and of excellent flavor.	30c.	$ 3.00
RADISH, Rose Chinese Winter	20c.	2.00
RADISH, Black Spanish	10c.	1.00
LETTUCE, Brown Dutch, Hammersmith	30c.	3.00
LETTUCE, Boston Market, extra fine	30c.	3.00
SPINACH, Round Leaved and Prickley	10c.	.50
CORN SALAD, or Fetticus	15c.	1.10
KALE, Dwarf Curled, or German Greens	15c.	1.25
CABBAGE, Dwarf Early York	30c.	1.50
CABBAGE, True Jersey Wakefield	75c.	8.00
CAULIFLOWER, Half Early Paris	1.00	10.00
CAULIFLOWER, Early Dwarf Erfurt, per pkt. 50c.	——	——
CAULIFLOWER, Leuormand	1.00	12.00

TURNIP SEED.

The following varieties, will be mailed *post-paid* upon receipt of price annexed: Early White Dutch, White Strap-leaf, Red-top Strap-leaf, Cow-horn, Improved American Ruta-baga, Long White French, Sweet German, 10 cents per ounce, 25 cents 4 ounces, 75 cts. per pound. Large Yellow Globe, 10 cts. per ounce, 30 cts. 4 ounces, $1.00 per pound. Prices for larger quantities to dealers, either in bulk or packets for retailing, will be given upon application.

FLOWER SEEDS FOR FALL SOWING.—20 varieties Hardy Annuals and Perennials, $1.

CATALOGUES mailed to applicants.

Address

B. K. BLISS & SONS, P. O. Box, 5,712,
No. 34 Barclay Street, New York.

TURNIP SEEDS. NEW CROP.

Purple or Red-Top, White Flat Dutch, Ruta Baga or Swedish, Golden Globe, White Globe, Long White French, &c. Price, 75 cents per lb.; 10 cents per oz. Mailed free on receipt of price. Large Early York and Oxheart Cabbage, Early Stone-Head and Butter Lettuce, Round and Savoy Spinach, Corn Salad. And all other seeds for sowing in the Autumn. **HENRY A. DREER,** Seedsman,
714 Chestnut St., Phila.

TURNIP SEED.

Fresh crop and select. Standard sorts free by mail, at 75 cents per pound. Liberal discount on large lots.
J. B. ROOT, Seed Grower, **Rockford, Ill.**

SEEDS

OF

RUTA BAGA and other TURNIPS

Of our own Raising. Our Motto is

Low Prices with High Quality.

Farmers can obtain supplies by Mail direct, post-paid, at small charge. Send Postal Card for List of Prices.

DAVID LANDRETH & SONS,
Philadelphia, Pa.

New Crop Turnip Seeds!

All the standard sorts. 75c. per lb.; 10c. oz.; 5c. packet. Free by mail. Special list of Turnip and other Seeds adapted to the season sent free. Improved Seed Wheat, Rye, Oats, Buckwheat, Grass Seeds, &c., a specialty. **Bird Seeds,** Fertilizers, Ground Bone, and Implements.

6 Packets Seeds Free

for two 3c. stamps. Circulars free.

BENSON & BURPEE, Seed Warehouse,
223 Church St., Philadelphia, Pa.

FRUIT AND ORNAMENTAL TREES!

LARGE STOCK. LOW RATES.

STANDARD PEAR TREES A SPECIALTY.

AGENTS WANTED. Address

E. MOODY & SONS, Lockport, N. Y.

NIAGARA NURSERIES. Established 1839.

GRAPE VINES.

The largest assortment of Standard as well as New Varieties. Plants of excellent quality are offered for fall trade at **Greatly Reduced Rates.** Price lists free.

Our Illustrated and Descriptive **Bushberg Catalogue** by mail, post-paid, for 25 cts. Address

BUSH & SON & MEISSNER,
Bushberg, Jeff. Co., Mo.

FLOUR SULPHUR.

Prime quality, guaranteed. Strictly pure. Packed in barrels 250 lbs. each. Also, Roll and Rock Brimstone. For sale by **BATTELLE & RENWICK,** 168 Front St., New York.

TO NURSERYMEN, DEALERS, PLANTERS, Etc.

Our wholesale catalogue will be issued about 1st of August. The stock in every department will be unusually fine.

ELLWANGER & BARRY,
Mount Hope Nurseries, Rochester, N. Y.

New Peaches and Apples.

Large and most desirable stock ever offered of extra early and late Peaches; also of new and valuable late keeping Apples. Among the Peaches I offer Briggs' Early May, Early Alexander, Amsden June, Early Beatrice, Early Louise, Early Rivers, Thurber, Brandywine, Christiana, Newington Free, Nanticoke, Bilgen's Late Oct. In Apples extra late keepers; I name a few, and refer to my Catalogue for a full list—Mann, Lawver, Nero, Stark, Holly, Bachelor, Gibbs, and Peidmont Pippin, with full list of all that is desirable among old varieties. Also an immense stock of all kinds of trees and plants usually found in a first-class Nursery. Catalogue, with descriptions, testimonials, rotation in ripening, with much valuable information, gratis. I have a fine stock of thrifty, light, young stock, suitable to go long distances via Express.

RANDOLPH PETERS, Great Northern and Southern Nurseries, **Wilmington, Delaware.**

AMSDEN JUNE PEACH.—Earliest. Ripe here June 27th, '76. Buds, **safely** by mail, per 100 $1. Express, per 1,000 $5.

L. C. AMSDEN, Carthage, Mo.

AMSDEN PEACH.—Earliest and Best Early Peach in the world. For Buds, Trees, and full History, address **JOHN WAMPLER, Carthage, Missouri,** or **Trotwood, Ohio.**

STRAWBERRY PLANTS.

Choicest kinds, and other **Small Fruits,** for sale by **E. P. ROE,** Author of "Culture of Small Fruits," "Play and Profit in my Garden," &c. Send for Circular.
Address **E. P. ROE,**
Cornwall-on-the-Hudson, Orange Co., N. Y.

STRAWBERRY PLANTS.

All the best varieties. Great American, Sterling, Cumberland, Triumph, &c. Lowest Rates; Prices Free.
JOHN S. COLLINS, Moorestown, New Jersey.

SOMERS RUBY.

Is the most **Magnificent, Delicious,** and **Valuable STRAWBERRY** ever produced. Plants, $1 per doz.; $5 per 100; $40 per 1,000.
WM. SOMERS, Bridgeport, Conn.

Cumberland, Triumph, and Springdale, new varieties Strawberries, possessing more merits than any variety now before the public. Send for circular. A. MILLER, Box 318, Carlisle, Pa. See July No. *American Agriculturist.*

THE GREAT AMERICAN STRAWBERRY and **DELAWARE RASPBERRY,** the largest and best. Millions of Trees and Plants at **Pomona Nursery.** Send for circulars. WM. PARRY, Cinnaminson, N. J.

Knox Fruit Farm & Nurseries.

STRAWBERRY PLANTS.

"Genuine Jucunda No. 700," and other varieties for Fall Planting.

Jucunda Our No. 700 in pots, ready Aug. 1st. $3.00 per 100.

SLEMMONS & GRIMES,
Box 115, Pittsburgh, Pa.

NEW FRUITS,

Dutch Bulbs; New and Rare Plants, &c.

Souvenier du Congress; Beurre d'Assumption; Pitmaston Duchesse, and other new Pears.

New Peaches, American and European varieties, a large stock of Pear and other Fruit Trees, &c.

Dutch Bulbs—Hyacinths, Tulips, Lilies, direct from Holland.

Duchess of Edinburgh, Pearle de Jardin, and other new Roses. New and Rare Plants for winter flowering, &c.

Catalogues mailed on application.—PRICES LOW.

JOHN SAUL, Washington City, D. C.

HONEYWELL,

THE EARLIEST OF PEACHES.

A. HANCE & SON,
Nurserymen and Florists, Red Bank, N. J.

No. 1. PERUVIAN GUANO. WARRANTED

Fertilizers

FOR THE FALL TRADE.

Genuine Peruvian Guano, Ground Bone, Poudrette, Land Plaster, and Russell Coe's Superphosphate of Lime. The Best, and sold as lowest prices.

H. B. GRIFFING,
60 Courtlandt St., N. Y.

Premium, Pure, Odorless, Fine Ground Raw Bone, "carries conviction with the sight of it." Produces Wheat and Grass. Address
EXCELSIOR FERTILIZER WORKS, Salem, Ohio.

PHILIP'S SPIRAL CORN HUSKER.

Simple, Durable, Effective, and works rapidly.

This machine, improved and perfected, does its work thoroughly, picking the corn from the stalk and stripping every ear, large or small, soft or hard, completely of its husks and silk. Any ordinary two-horse power will run it.

R. H. ALLEN & CO., N. Y. city, Local and Export Agents.
For Circulars, etc., address Manufacturers,
PHILIP'S SPIRAL CORN HUSKER CO.,
Hudson, Columbia Co., N. Y.

UNION CORN HUSKER.

SELLS AT SIGHT.

No cold or sore fingers. Can be used with or without mittens. Last a lifetime.—Taken 6 Premiums.—One sample, 35 cts.; two for 60 cts.; 4 for $1.00.

CITY NOVELTY CO.,
108 South 8th St.,
Philadelphia, Pa.

LATEST IMPROVED

HORSE POWERS,

Grain Threshing AND **Wood Sawing Machines,** PATENTED.

MANUFACTURED AND SOLD BY

A. W. GRAY & SONS,
Middletown Springs, Vt.

Parties who wish to purchase Machines that have proved to be superior to all others, will do well to send for circular and descriptive price list, which will be forwarded upon application, free.

IF YOU WANT THE BEST THRESHING MACHINE

ever made, send 3 cent stamp to M. Harder, Empire Agricultural Works, Cobleskill, N. Y., for Postage on Catalogue, with price, full information, and Judges' Report of National Implement Trial.

MEDAL MACHINES.

New York State Agricultural Works.

First Premiums at all Competitive Trials.

Railway, Chain and Lever Horse Powers, Threshers and Cleaners, Threshers and Shakers, Clover Hullers, Feed Cutters, Wheel Horse Rakes, Horse Pitchforks, Shingle Machines, Straw Preserving Rye Threshers, Portable Steam-Engines, Cider and Wine-Mills and Presses. Dog and Pony Powers, etc., etc.

WHEELER & MELICK CO.,
ALBANY, N. Y.

Send stamp for Circular.

The Dodge Excelsior Hay Press

PORTABLE. VERY STRONG.

TEN TONS IN A CAR.

Presses a smooth, round bale, any length, from one to four feet. Driven by horse or steam power. A fast and powerful Press. Fully warranted to perform as represented.

MOHAWK & HUDSON M'F'G CO.,
Makers, Waterford, N. Y.

CHAPMAN & VAN WYCK,

(Established 1849),

DEALERS IN

PERUVIAN GUANO

EXCLUSIVELY,
170 Front Street, New York.

THE CELEBRATED

ECLIPSE WIND MILL.

Perfectly Self-regulating.

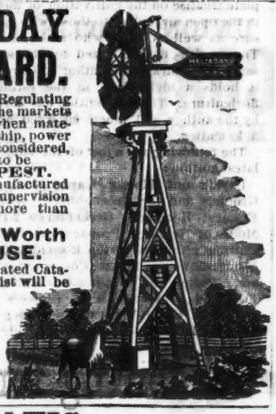
The Original Solid Wheel

PATENTED IN 1867.

Tested 8 years. **4,000** in use. Awarded **96** First Premiums. 10 per cent more power guaranteed than any other mill. The strongest Wind Mill made. No loose joints or sections. Warranted not to blow down. Adopted by the Railroads. Send for Illustrated Circulars.

ECLIPSE WIND MILL CO., BELOIT, WIS., or A. J. CORCORAN, Agent, 76 JOHN STREET, NEW YORK.

HALLADAY STANDARD.



The first Self-Regulating Wind Mill offered the markets of the world, and when material used, workmanship, power and durability are considered, it is acknowledged to be

THE CHEAPEST.

It has been manufactured under immediate supervision of inventor for more than twenty-two years.

$3,000,000 Worth NOW IN USE.

A 58 page Illustrated Catalogue with Price List will be sent free to all who make application.

Agents wanted in all unassigned counties.

U. S. WIND ENGINE & PUMP CO. BATAVIA, ILL.

AUTOMATIC PUMPS.

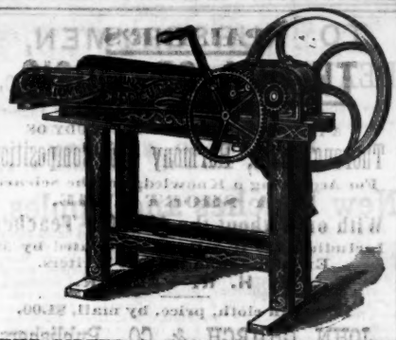
Water driven to any height and distance by *compressed air*. Country houses supplied cheaply and certainly for bath-rooms, water closets, hot and cold water faucets, etc.

Plenty of fresh water for stock on farms. Address

HARTFORD PUMP CO., HARTFORD, CONN.

AMERICAN MACHINE CO., 439 Walnut St., Phila. NEWTON & HALE, 150 Lake St., Chicago.

HORSE POWERS AND THRESHERS of all kinds a specialty.



THE SILVER & DEMING FEED CUTTER Has no superior in the market.

Celebrated for its great capacity, ease of running, and its adaptability to all kinds of work. We also manufacture Horse Powers, Sawing Machines, &c. Send for Circular.

SILVER & DEMING MFG CO., Salem, Ohio.

Location at Centennial, Q 23 Agricultural Hall.

I have invented the best low priced Straw and Stalk Cutter. #9 and $10 sizes *easily* cut from 30 to 50 bushels per hour. Allowance made for freight. Not to be paid for till tried on your farm, and found satisfactory. Splendid chance for farmers to sell them. Do you want one. Circulars free.

W. GALE, Chicopee Falls, Mass.

BALDWIN'S American Fodder Cutter.

Best in the market. Don't purchase any other kind until you have seen and examined this. Send for Circular, containing Description and Price List. See Nov. No. of *Agriculturist*. C. PIERPONT & CO., Manufacturers, NEW HAVEN, CONN.

THE PERFECTUAL HAY PRESS bales hay twice as fast as any other press, puts ten tons in a grain car, and the hay brings better
prices in any market; hence it is cheaper at its price than any other press on sale. Address for catalogue, P. K. FREDERICK & Co., Albany, N. Y. Montreal, P. Q. No. 165 West 16th St., Chicago, Ill. Wilkinson Avenue, N. St. Louis, Mo.
20 bales of hay Per hour, fully ready to ship.
1876 P. K. FREDERICK PERFECTUAL HAY PRESS.

Frederick's Wire Bale Ties are the cheapest and best.

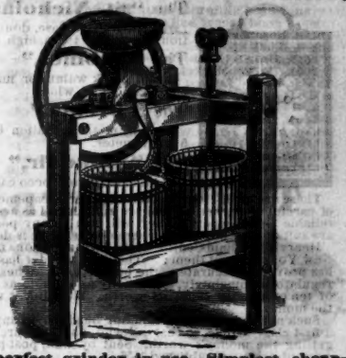
CABLE FENCING.

Proof Against Cattle, Fire, and Rust. Hundreds of miles erected. Cheap, Handsome, Durable.

PHILIP S. JUSTICE, 14 North 5th St., Phila.

MEYERS & ALLEY, Wholesale Dealers & Commission Merchants IN GREEN FRUITS AND PRODUCE. 83 MURRAY ST., NEW YORK.

The Farmer's Favorite CIDER & WINE MILL.



Only perfect grinder in use. Simplest, cheapest and best Mill made.

Send for Illustrated Circular.

HIGGANUM MANUFACTURING CO., HIGGANUM, CT.

Cider & Wine Mills, and Presses.

HICKOK'S KEYSTONE CIDER MILL. EXCELSIOR CIDER MILL. HUTCHINSON'S FAMILY CIDER MILL. SCREWS, PRESSES, GRINDERS, Etc.

Depot for the sale of the above Mills, in New York City, **60 Courtlandt St.**

Send for Circular. H. B. GRIFFING.

CIDER PRESS.

For Presses, Graters, and all Cider Machinery—Address

BOOMER & BOSCHERT PRESS CO., SYRACUSE, N. Y.

FOR SORGO & SUGAR-CANE.

The only recognized standards in Cane Machines are the

COOK EVAPORATOR AND THE VICTOR CANE-MILL.

There are of these Machines **OVER 40,000 IN USE.**

They have taken the **FIRST PREMIUM AT 120 STATE FAIRS.**

All attempts, thus far, to equal these unrivaled Machines by other contrivances have **signally failed** on trial. Planters can't afford to risk crops of Cane on light, weak, unfinished Mills that *break* or *choke*, or on common pans or kettles that do *second-class work*, and *only half enough* at that. *The Sorgo Hand-Book and Price-List sent free.*

BLYMYER MANUFACTURING CO.,

664 to 674 West Eighth St., CINCINNATI, O.,

Manufacturers of Cane Machinery, Steam-Engines, Corn Crushers, Farm, School, and Church Bells.

BLAKE'S PATENT

Stone and Ore Breaker

Crushes all hard and brittle substances to **any required size.** Also, any kind of STONE for ROADS and for CONCRETE, &c. Address BLAKE CRUSHER CO., New Haven, Conn.

PATENT CARBON PLOW.

Wood or Iron Beam.

Carbon is a practical mixture of Steel, Iron and other metals. Cast in form, harder than steel or any surface-chilled iron. Will scour in any soil. Costs less than steel, and but a trifle more than cast-iron.

FOR PRICES AND FURTHER INFORMATION, ADDRESS

REMINGTON AGRICULTURAL CO., Ilion, N. Y.

The Ilion Patent

SELF-DISCHARGING AND HAND LEVER HAY RAKE.

Thirty Hour Clocks.

BY MAIL, POSTAGE PAID.

The "St. Nicholas," $2

$1 (box board case, double; imitation morocco; 4¼ in. high, 4 in. wide.

The "Cabinet," $2.50

(Solid black walnut or maple case; 6 in. high, 4½ in. wide.

The "Oreide," $3.00

(Round metal imitation Gold case; 5 in. diameter.

The "Boudoir," $3.50

(5 in. octagon morocco case.)

These are all 30-Hour Detached Lever Escapement Clocks, of careful construction, and are guaranteed as accurate and reliable time-keepers. They will run in any position, and are suitable for any place where correct time is desired.

Henry T. Williams, editor of the LADIES' FLORAL CABINET, New York, says of them: "The little wonder has come. It has proved as accurate as the best $200.00 watches, obeys the regulator immediately, and is fully as reliable as any clock of ten or twenty times its worth. We think it well worth the money."

Such notices as these would not be given to anything but a first class article, so that all who purchase are certain of getting the money's worth. Sent by mail, post-paid, on receipt of price. Established 1856.

S. B. JEROME & CO., NEW HAVEN, CONN.

NEW

WILLCOX & GIBBS

AUTOMATIC

SILENT SEWING MACHINE.

HIGHEST AWARDS FROM STATE INSTITUTES.

It will pay you to write for full particulars of this wonderful invention.

WILLCOX & GIBBS S. M. CO.,
658 Broadway, New York.

THE NEAT HOUSEKEEPERS'

STOVE DRESSING.

NO DUST! NO SMELL!

Always soft and ready for use without a dish.

It will do more work with less labor and expense, and give a more elegant and lasting lustre than any Stove Polish ever produced. *A stove can be dressed on delicate carpet without soiling it.* Send 10 cents for sample package.

B. F. BROWN & CO., Boston, Mass.

NORNY'S

Fruit Preserving Powder

Is tasteless, and preserves all kinds of fruit, either with or without being air tight. This powder has been used for the last seven years in all the States of the Union, with perfect success. It retains a finer flavor than any other process. Price, 50 cents a box, which preserves 60 pounds of dressed fruit. Sent by mail, to any address, with full directions. Usual discount to the trade. ZANE, NORNY & CO.,
Sole Proprietors, 136 North 2nd St., Philadelphia, Pa.

Twelve Farmers Wanted

In every Town in the United States to buy our $2.50 and $3.00 WORKING SUITS.

The best things for work in hot weather ever made.

To clubs of twelve or more we give same terms as to agents. Write for particulars to

CHAS. A. BALDWIN & CO.,
New Haven, Conn.

N. B.—The Editors of this Magazine appreciate their exemplends.

WANTED—the address, on a Postal Card, of those who think of purchasing FINE GOLD WATCHES, or GOLD PENS.
Address S. H. JENNINGS, Deep River, Conn.

SEND MEASURE of Head and 25 cts. to R. A. BUTTERFIELD, West Chelmsford, Mass., and receive by return mail a light summer cap.

65 of the prettiest Visiting Cards you ever saw, with your name neatly printed on them, sent by return mail, upon receipt of 25 cts. and a three-cent stamp. You will have samples of Glass, Marble, Snowflake, Damask, Repp, Tinted and White Bristol. The stock shall be first-class. I have some of the most particular and expert printers to be obtained in the country, and employ no inexperienced boys to turn off cheap work. No blurred or imperfect work leaves my establishment. Try them and you will be pleased. Write plainly, and give full address.

W. C. CANNON,
46 Kneeland St., Boston, Mass.

YOUR NAME neatly printed on 40 fine Bristol Cards (4 tints) for 10 cts. and 3c. stamp; or 50 Assorted Cards (no two alike) 30c. 20 Acquaintance cards, 12 styles, 10c. Agents' outfit, 25c.
CLINTON & CO., Box 49, CLINTONVILLE, CONN.

GARDEN ENGINE AND FIRE EXTINGUISHER.—For Washing Windows, Carriages etc. Protects Buildings from Fire, and Trees, Vines, etc., from Insects. Throws water 60 ft. Easily carried. No Dwelling, Country House, or Factory should be without the Fountain Pump. Send for large Illustrated Circular. J. A. WHITMAN, Sole Proprietor and Manufacturer, Providence, R. I.

PALMER'S

THEORY OF MUSIC.

(JUST READY.)

A PRACTICAL GUIDE TO THE STUDY OF

Thorough-Bass, Harmony and Composition,

For Acquiring a Knowledge of the Science,
IN A SHORT TIME,
With or Without the Aid of a Teacher.

Including 730 Questions, illustrated by 382 Examples from the best Writers.

By H. R. PALMER.

Bound in cloth, price, by mail, $1.00.

JOHN CHURCH & CO., Publishers,
CINCINNATI, O.

THE PIONEERS & PATRIOTS OF AMERICA.—A Series illustrating the settlement and early history of our country, by J. S. C. ABBOTT. Now complete, in 12 volumes, uniformly bound and illustrated, per volume $1.50.—1. Columbus.—2. De Soto.—3. La Salle.—4. Miles Standish.—5. Captain Kidd.—6. Peter Stuyvesant.—7. Franklin.—8. Washington.—9. Daniel Boone.—10. Kit Carson.—11. Paul Jones.—12. David Crockett. The series presents a complete picture of our country's early history in most attractive form. All or any volumes sent by mail, post-paid, on receipt of price. DODD, MEAD & COMPANY,
Publishers, 751 Broadway, N. Y.

Geo. Gillott

STEEL PENS!

Sold by all Dealers.

No. 91 JOHN ST., NEW YORK.

HENRY HOE, Sole Agent. JOSEPH GILLOTT & SONS.

Agents wanted for a new, permanent, and respectable business, in which any active man or woman can easily make $5 to $10 a day. A person who had never canvassed before made $7.50 in 1 hour; an experienced agent made $24.75 in 15 hours. Particulars free. C. A. CLEGG, Manager, 69 Duane St., N. Y.

$5 TO $10 A DAY SURE.

"We know C. A. Clegg to be responsible and reliable, and think he offers Agents extraordinary inducements."—*N. Y. Weekly Sun, April 19, 1876.*

FORT EDWARD COLLEGIATE INSTITUTE.

For adult students, to prepare for college, for business, for professional studies, or for life. Graduates' courses of one, two and three years, with Diplomas. Fifteen Teachers. $194 per academic year for board, furnished room, fuel, washing, and common English. 23d year begins Aug. 31. For catalogues or for rooms address
JOSEPH E. KING, D.D., Fort Edward, N. Y.

HARVARD EXAMINATIONS FOR WOMEN, NEW YORK CITY, MAY OR JUNE, 1877. For information address SECRETARY OF LOCAL COMMITTEE, 60 Fifth Avenue, New York.

50 Visiting Cards, with your name finely printed, sent for 25c. We have 100 styles. Agents Wanted. 6 samples sent for stamp. A. H. Fuller & Co., Brockton, Mass.

EVERY FARMER will save MONEY by using "BELL'S CARPENTRY MADE EASY," a $5 book, telling how to build Barns, Out-Houses, Bridges, &c., without a Carpenter. HOWARD CHALLEN, Phila'a.

RUFUS L. COLE, PRODUCE COMMISSION MERCHANT, 141 Reade St., New York. *Established in 1855.* Market reports and shipping directions sent *free* on application.

E. & O. WARD, PRODUCE COMMISSION MERCHANTS. (Established 1845.) No. 279 Washington-st., N. Y. Reference, *Irving National Bank*, New York City.

BUTTER WORKER.

The most Effective, Simple and Convenient Yet Invented. Works 30 lbs. in less than 5 minutes, thoroughly working out the buttermilk and mixing in the salt.

"It is a machine that should be in every dairy, small and great."—*William Crosier, Northport, L. I.*

Send for circular and price lists.

A. H. REID,
1621 Market St., Philadelphia, Pa.

Practical Floriculture.

A Guide to the Successful Propagation and Cultivation of Florists' Plants.

By PETER HENDERSON,

Author of "Gardening for Profit."

Beautifully Illustrated. Price, Post-paid, $1.50.

In this work, which has everywhere become so deservedly popular, not only is the whole "art and mystery" of propagation explained, but the reader is taught how to plant and grow the plants after they have been propagated. The work is not one for florists and gardeners only, but the amateur's wants are constantly kept in mind, and we have a very complete treatise on the cultivation of flowers under glass, or in the open air, suited to those who grow flowers for pleasure as well as those who make them a matter of trade. The work is characterized by the same radical common sense that marked the author's "Gardening for Profit," and it holds a high place in the estimation of lovers of floriculture. The new edition has been thoroughly revised by the author, and much enlarged by the addition of valuable matter.

The following are a few of the subjects embraced in the latest edition:

Laying out Flower Garden and Lawn; Designs for Grounds and for Greenhouses; Soils for Potting; Cold Frames; Hot-Beds; Greenhouses Attached to Dwellings; Modes of Heating; Propagation of Plants by Seeds and by Cuttings; Culture of the Rose and Tuberose; Growing of Winter-flowering Plants; Construction of Bouquets, Baskets, etc.; Parlor and Window-Gardening; Wardian-Cases and Ferneries; Insects; What Flowers Grow in the Shade; Culture of Grape-Vines under Glass; The Profits of Floriculture; How to Become a Florist, etc., etc.

Gardening for Profit.

A Guide to the Successful Cultivation of the Market and Family Garden.

By PETER HENDERSON.

Finely Illustrated. Price, Post-paid, $1.50.

The following voluntary notices of Mr. Henderson's books are specimens of similar testimony from very many quarters.

"*February 8th*, 1875.

"Enclosed find draft for $3.00, the published price of revised editions of 'Gardening for Profit' and 'Practical Floriculture.' I have first editions, and they have saved the cost of each more than one hundred times. Many thanks for what you are doing for the gardeners of the United States."

"*December 9th*, 1874.

"Your Gardening for Profit is what the Family Bible is to a good old Methodist—the only sure guide."

"*March 23d*, 1874.

"If this should go to Mr. Henderson, I would say that I believe the gardeners of this country would gladly hail another edition of 'Gardening for Profit;' at least, I thank him for that little work. Through its influence I left a paying manufacturing business and began to follow its teachings. This was three years ago. Now I have a market garden of thirty acres and 400 four-feet sash, and enjoy myself as I never did before. Again I thank him."

AMERICAN CATTLE.

Their History, Breeding, and Management.

By LEWIS F. ALLEN.

ILLUSTRATED. PRICE, POST-PAID, $2.50.

This book will be considered indispensable by every breeder of live-stock. The large experience of the author in improving the character of American herds adds to the weight of his observations, and has enabled him to produce a work which will at once make good its claims as a standard authority on the subject. An excellent feature of the volume is its orderly, methodical arrangement, condensing a great variety of information into a comparatively small compass, and enabling the reader to find the point on which he is seeking light, without wasting his time in turning over the leaves.

NEW AMERICAN FARM BOOK.

Originally by RICHARD L. ALLEN.

Revised and greatly enlarged

By LEWIS F. ALLEN.

PRICE, POST-PAID, $2.50.

Allen's American Farm Book has been one of the standard farmers' hand-books for twenty years; it is still a valuable book, but not up to the times; and as its author, Mr. R. L. Allen, could not give time to its revision, this was undertaken by his brother, Hon. Lewis F. Allen, the distinguished farmer of Erie county, editor of the American Shorthorn Herd-Book. The work is greatly enlarged, and full of suggestions from the rich experience of its editor and reviser, and is called the *New* American Farm Book.

Either of the above books sent post-paid on receipt of price, by

ORANGE JUDD CO., 245 Broadway, New York.

Valuable Architectural Books

For Carpenters and Builders.

Hussey's

National Cottage Architecture;

or

Homes for Every One.

With Designs, Plans, Details, Specifications, and Cost; with Working-Scale Drawings complete, so that houses may be built direct from the book. Adapted to the popular demand for practical, handsome, and economical homes. Royal Quarto. Post-paid, $6.00.

Atwood's

Country and Suburban Houses.

Illustrated with about 150 engravings. Hints and Suggestions as to the General Principles of House-building, Style, Cost, Location, etc. Post-paid, $1.50.

Monckton's

National Stair-Builder.

Is a complete Work on Stair-Building and Hand-Railing. Fully explained and illustrated by large scale diagrams in two colors, with designs for Staircases, Newels, Balusters, and Hand-Rails. Royal Octavo. Post-paid, $6.00.

Monckton's

National Carpenter and Joiner.

A complete work, covering the whole science of Carpentry, Joinery, Roofing, Framing, etc., fully explained and illustrated by large scale diagrams in two colors. Royal Quarto. Post-paid, $6.00.

Woodward's

National Architect.

1,000 Designs, Plans, and Details, for Country, Suburban, and Village Houses; with Perspective Views, Front and Side Elevations, Sections, Full Detail Drawings, Specifications, and Estimates. Also, Detail Drawings to Working Scale, of Brackets, Cornices, French Roofs, Sectional and Framing Plans of French Roofs, Dormer-Windows for French Roofs, Bay-Windows, Verandas, Porches, Plaster Finish, Cornices, Ceilings, Hard-wood Mantels, and all that is required by a Builder to design, specify, erect, and finish in the most approved style. One superb quarto volume. Post-paid, $12.00.

Woodward's

Country Homes.

150 Designs and Plans, with Description of the Manner of Constructing Balloon Frames. Post-paid, $1.50.

Woodward's

Suburban and Country Houses.

70 Designs and Plans, and numerous examples of the French Roof. Post-paid, $1.50.

Woodward's

Graperies and Horticultural Buildings.

Designs and Plans of Hot-Beds, Cold-Pits, Propagating Houses, Forcing Houses, Hot and Cold Graperies, Greenhouses, Conservatories, Orchard Houses, etc., with the various modes of Ventilating and Heating. Post-paid, $1.50.

Jacques'

Manual of the House.

How to Build Dwellings, Barns, Stables, and Out-Buildings of all kinds. 126 Designs and Plans. Post-paid, $1.50.

Wheeler's

Rural Homes.

Houses suited to Country Life. Post paid, $2.00.

Wheeler's

Homes for the People.

100 Original Designs, with full Descriptions, and Constructive and Miscellaneous Details. Post-paid, $3.00.

Harney's

Barns, Out-Buildings, & Fences

Containing Designs and Plans of Stables, Farm-Barns, Out-Buildings, Gates, Gateways, Fences, Stable Fittings and Furniture, with nearly 200 Illustrations. Royal quarto. Post-paid, $6.00.

Cummings'

Architectural Details.

387 Designs and 967 Illustrations of the Various Parts needed in the Construction of Buildings, Public and Private, both for City and Country. Also, Plans and Elevations of Houses, Stores, Cottages, and other Buildings. Royal Quarto. Post-paid, $10.00.

Croff's

Progressive

American Architecture.

This work presents, in illustration, a great variety of CHOICE AND ORIGINAL MATTER, embracing Elevations and Plans of Dwellings of various styles, costing from one thousand to one hundred thousand dollars. Store Fronts, School, Bank, and Church Buildings; beautiful Perspectives in color and black, giving designs of elaborate and charming Floral decorations; Horticultural Plans, Fountains, Shrubbery, Offices, Arbors, Cupolas, Cemetery Vaults in Stone, Stables, &c. Royal Quarto. Post paid, $10.00.

Lakey's

Village and Country Houses.

Or, Cheap Houses for All Classes, comprising eighty-four pages of designs. The object, in almost every instance of these designs, has been to secure as large an amount of space and comfort as was possible with the least expenditure of money, without neglecting the exterior features of each building. Royal Quarto. Post-paid, $6.00.

Eveleth's

School-House Architecture.

A new and original work, containing Seventeen Designs for School-houses, Sixty-seven Plates with Perspectives, Elevations, Plans, Sections, Details, Specifications, all drawn to working scale, with methods of Heating and Ventilation. Large Quarto. Post-paid, $6.00.

Copley's

Plain & Ornamental Alphabets

Giving examples in all styles, together with Maps, Titles, Borders, Meridians, Ciphers, Monograms, Flourishes, etc., adapted to the practical use of Surveyors, Civil Engineers, Draughtsmen, Architects, Sign Painters, Schools, etc. Post-paid, $3.00.

ORANGE JUDD COMPANY, 245 Broadway, New York.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 288.

A Turnip Soil.—The popular idea in favor of immense roots is shown to be an unwise one by the results of investigations into the comparative feeding value of the largest and moderate sized roots. The latter have been found the more valuable in a very considerable proportion. Recently some experiments made in feeding turnips grown upon a rich clay soil, have shown that these roots thus grown are more valuable for food than when grown upon sandy soils. The results show that the choice or the preparation of the soil for this crop is of great importance. Few crops are more carelessly grown than this, and it is a seasonable matter for consideration at this time that a good feeding root is not grown upon either a poor or an extra rich soil.

A Large Egg.—An Aylesbury duck in England is reported to have laid an egg 10½ inches long and 9¼ inches in girth. This extraordinary egg weighed 8 ounces; the outer shell contained two yolks, and also a perfectly formed egg of the usual size and character.

Veterinary Obstetrics.—A new work, a "Text Book of Veterinary Obstetrics," by George Fleming, the well known English veterinary surgeon, and Editor of The Veterinary Journal, is announced. This work, treating as it does of those most important functions of animal life, pregnancy and parturition, will fill a void in veterinary literature, and will meet one of the greatest needs of the farmer and stock breeder. The many ailments to which stock are subject during this period, and the serious losses borne by stock owners in consequence of these ailments, chief among which are abortion and puerperal fever, render the careful and practical treatment of them of the highest importance, and a trustworthy text book relating to them of the greatest value. The work will be published in eight or ten parts, to appear at intervals after the present month. The publishers are Bailliere, Tindall & Co., London.

Swelling on a Colt's Throat.—"J. A.," Clayton Co., Iowa. Swellings beneath the jaw on the throat of a colt frequently occur as the result of a cold, or the colt is sometimes dropped with them. They may be removed by rubbing them with common iodine ointment, or more slowly but as effectively in the end by rubbing the skin well with mustard mixed with warm water. A dram of chlorate of potash may be given in some sugar, or a little oat-meal which the colt may be induced to lick.

The Duncan Strawberry.—Our plants of this variety have not yet fruited, and our knowledge of it is confined to an examination of very abundant specimens sent by its introducers, E. & J. G. Williams, Montclair, N. J. The notable quality of the fruit is its great firmness; it has a good color, and runs of a very fair size. In quality it is better than the Wilson. From what we have thus far seen of it, we regard it as a very promising market berry.

The Effect of "Breeding" and Feeding upon the Skin.—An article in the Shoe and Leather Reporter, by Mr. J. S. Schultz, an extensive and thoroughly well informed tanner, makes a curious reference to the effect of the high breeding to which Short-horn stock has been subjected for some years, upon the quality of the hide, and also to the effects upon the condition of the skin, of high feeding, starvation, and climate. Thus hides grown in a cold climate such as Canada or Russia, are thick and coarse in texture and fiber, and those from warm countries are fine and thin. The hides of "improved" cattle are thin and less valuable than those of the semi-wild cattle of South America and Texas, and in this respect the improved breeding which these cattle are undergoing, tends to overcome the influence of climate, and is changing the character of their hides. Poor feeding and ill health, as might be expected, cause the hide to be fine and close in texture, shrinking the fiber; this result follows the condition known amongst farmers as "hide-bound." It is not held as a serious consideration amongst farmers, how much the hides of their cattle may be worth, but yet as the value of the skins as a material for the manufacture of so widely used an article as leather, is of no little consequence to the world at large, it is interesting to note that the better the cattle are fed and cared for, the better is the leather manufactured from their hides.

The New York Horticultural Association.

ITS FIRST EXHIBITION.

The reproach that New York, the commercial center of horticulture, had no Horticultural Society, has been removed by the formation of the association named above. We have kept our readers advised of the doings of this new society, as it contains the right material for making it one of the most important horticultural organizations in the country. Its location is such that whatever is new and valuable in horticulture will, as soon as its existence becomes generally known, naturally gravitate towards it, and it will, if rightly managed, assume a position which older societies elsewhere (all honor to them), have been many years in achieving. The new Association held its first exhibition from June 12th to the 15th, at Gilmore's Garden, the building formerly known as the Hippodrome. Probably every one who attended the exhibition was surprised at its extent. Plants in pots were its strong feature, and these were remarkable, not only for their numbers, but for the excellence of the individual specimens. An English horticulturist, who was present, informed us that some of the collections would attract attention at any of the great exhibitions of Europe, so fine were the plants composing them. Being engaged upon other matters, we requested Mr. W. J. Davidson, No 322 Fulton Street, Brooklyn, the Secretary, to give us a list of the most important plants and cut flowers exhibited; he did this in so complete a manner that we are unable to make room for the lists as he gave them, and were obliged to abbreviate. If any of our horticultural friends feel that they are not sufficiently noticed, they must blame the editor rather than Mr. Davidson.

George Such, South Amboy, N. J., several rare and curious East Indian Pitcher plants, including *Nepenthes Dominiana*, *N. Rafflesiana*, with immense bearded pitchers, *N. rubra*, *N. Sedeni*, and several others. Some of these had enormous pitchers, which would hold a pint or more, and were an attractive novelty to most visitors. Of Palms he had the rare *Martinezia erosa*, *Bactris chatorachis*, *Verschaffeltia melanochætis*, and *Veitchia Canterburyana*. The lovely Maiden Hair Ferns were represented by the graceful *Adiantum Farleyense* and *A. Peruvianum*. Among other ferns were the rare (in this country), *Gleichenia flabellata* and *G. speluncæ*, and a magnificent plant two and a half feet in diameter, of *Pteris scaberula*. He also exhibited the singularly beautiful Flamingo plant, *Anthurium Scherzerianum*, from Costa Rica, the chaste *Eucharis Amazonica*, and a lovely white *Cypripedium* from Moulmein, *C. niveum*, the flowers of which had been expanded for three months. Among the noticeable plants in Mr. Such's collection were *Paullinia thalictrifolia*, *Campsidium filicifolium*, a very neat plant of *Nertera depressa*, with the beautiful coral berries nestling among the moss-like leaves, and a noble specimen of one of our southern pitcher plants, *Sarracenia flava*. All the plants were in full vigor, and indicated masterly cultivation.

Mr. William Bennett, Flatbush, L. I., contributed a collection comprising many rare novelties, including fine plants of *Curculigo recurvata variegata*, *Croton Weismanni*, which looks as if it would be the most useful of the genus, a finely colored plant of *Croton undulatum*; *Dieffenbachia Bausei* (very distinct); *Dracæna amabilis*, and *D. splendens*, a dwarf bright colored variety. A large plant of the variegated New Zealand Flax, *Phormium tenax variegatum*, and also *P. Colensoi*, *Maranta Makoyana*, *Beaucarnea recurvata*, *Bonapartea hystrix*, and *Croton Veitchii*. Mr. Bennett also exhibited excellent plants of *Pandanus Veitchii*, a beautiful broad-leaved, white-striped screw-pine, *P. Vandermeerschii*, *P. graminifolius*, and *P. Javanicus variegatus*. A few neat Caladiums, the most beautiful being a new variety called "Excellent," a large, well colored plant of *Aspidistra elatior variegata*. Mr. Bennett's collection also comprised fine tree ferns and fine specimens of rare but humbler ferns. Among succulents, the most prominent were *Agave applanata*, two splendid plants of *A. filifera*, *Yucca aloifolia variegata*, and *Y. quadricolor*. He also exhibited some of his special pets in Palms, including the lovely *Cocos Weddeliana*, and others which we have not room to mention, with good plants of *Dion edule* and *Cycas revoluta*. His collection was one of the features of the exhibition, every plant perfect, and arranged with care and taste.

Mr. Isaac Buchanan, 9 West 17th Street, New York, also sent a large collection, consisting principally of Orchids, besides which were some very fine specimens of Ferns, Palms, Agaves, and other succulents. A new Fuchsia, and very promising, from St. Domingo, was exhibited by him for the first time.

Mr. W. C. Wilson, Astoria, L. I., sent a well-grown miscellaneous group of stove and greenhouse plants, ferns, etc., the most interesting being four large *Cycas revoluta*, the plant incorrectly called Sago Palm, *Dracæna regina*, *D. Guilfoylei*, and others. *Dion edule*, *Ficus Parcelli*, Alocasias, Caladiums, and a neat group of ferns.

From Mr. James Paterson, Newark, N. J., came some noble Orange trees full of fruit, large Palms, Dracænas, Pandanads, Agaves, Anthurium, a very interesting collection of Orchids in bloom, principally varieties of *Cattleya Mossiæ*.

Mr. John Bush, of the Tremont Botanic Gardens, Tremont, N. Y., exhibited six fine plants of *Musa Cavendishii*, the dwarf Banana, a fine plant of *Musa coccinea*, in flower, *Dieffenbachia Bausei*, *Areca oleracea*, and other plants, including a choice group of rare Ferns.

Mr. B. Fagan, West Farms, also sent a well-grown lot of choice Ferns.

Mr. W. L. Fischer, Superintendent of the Central Park gardens, had a very fine and ornamental group of large Palms, Tree Ferns, Dracænas, Crotons, Pandanads, and other variegated leaved plants, closely followed by Mr. John Thornhill, of Gilmore's Garden, who grouped his plants with great taste, and exhibited a noble *Pandanus utilis*, a number of Palms, Dracænas, and plants of a like ornamental character.

To a great many, both of the trade and of the visitors, the most interesting plants were those contributed by S. B. Parsons & Sons, Flushing, L. I., who in addition to taking first-class prizes in variegated plants, Azaleas and Ferns, showed a very rare and choice lot of variegated Maples and Oaks sent from Japan by Thomas Hogg; also many rare Conifers, and other noticeable plants, the list of which is too long to reproduce.

R. B. Parsons & Co., Flushing, L. I., exhibited six large Rhododendrons of the most hardy type and of varied colors. The Rhododendron has suffered a great deal in this country by English firms sending out varieties hardy there, but too tender to stand our severe winters. Those grown by Messrs. Parsons & Co., having been fully tested in their exposed grounds, are perfectly hardy, and of a wonderful range of color. The same firm also exhibited cut blooms of Rhododendrons, Hardy Shrubs, and Roses, that attracted much attention.

Mr. Charles Zeller, Flatbush, L. I., brought a neat collection of Agaves and Aloes, and a stand of cut blooms of his specialty, the Monthly Carnation, containing some very promising seedlings.

Mr. Peter Henderson showed six well-grown Golden Tricolor Pelargoniums.

Mr. Riddle, gardener to Elisha Brooks, Esq., sent two splendid standard *Achyranthes Gilsoni*, several feet high, with three tiers of branches on each, a very neat pan of Caladiums, and a large hanging basket of the beautiful Fern, *Nephrolepis tuberosa*.

Mr. John Henderson, Flushing, L. I., sent a quantity of the climbing Japanese Fern, *Lygodium scandens*, beautifully grown, the plants being about five feet high and tastefully grouped to form a fairy bower.

The exhibition of cut flowers was very good for the season, more especially in roses, where Mr. William A. Burgess, of Glen Cove, keeping up his old reputation, showed a very fine collection, carrying off the first honors; his "Marechal Niels" being especially fine.

Messrs. Peter Henderson, William C. Wilson, R. Parsons & Co., August Dejonge, and others, also contributed largely, and by renewing their blooms at intervals, added much to the success of the meeting.

Mr. Peter Hanson, Brooklyn, N. Y., a most successful and extensive cultivator of lilies, exhibited cut blooms of several novelties, including *Lilium Hansoni*, *L. Washingtonianum*, and *L. Humboldtii*, from the west of the Rocky Mountains. Mr. Hanson also received a special certificate for a seedling lily raised from *L. bulbiferum*, named by the judges *L. bulbiferum aureum marginatum*. [Why should the judges indulge in Latin names for garden varieties?—ED.] the entire stock of which was bought by Mr. Court, of Veitch & Sons, London, who was present, and kindly acted as one of the judges on plants.

The decorative florists of New York, came out in full force and exhibited rare specimens of their works in floral designs, displaying novelty and richness. Messrs. Hanft Bros., F. Gordon, Ekirch & Wilson, Walter Reid, Jas. Sutton, and A. McConnell, taking the principal prizes, while Messrs. Lynch, Fitzpatrick Dards, Sealey, Gordon, and others, contributed largely to the success and beauty of that department by sending designs and bouquets not for competition, and renovating and renewing them every afternoon.

Fruits and vegetables were not largely represented, the exhibition being about a week too early for a good show of strawberries.

Mr. Robert Carey, gardener to Miss Hattie B. Trimble, Westchester, Pa., exhibited six varieties of hot-house grapes, all well grown and well colored; two bunches of "Black Barbarossa" being especially fine. Mr. John Jones, Madison, New Jersey, showed two fine bunches of "Black Hamburg."

In strawberries, Mr. Peter Henderson, South Bergen, N. J., showed fine dishes of "Wilson," "Col. Cheney," "Monarch of the West," "Black Defiance," and "Seth Boyden."

Mr. William A. Burgess, Glen Cove, L. I., had a fine dish with a plant in fruit of his new seedling strawberry, "Queens Co.," which was awarded a special certificate.

Mr. Henshaw, New Brighton, S. I., showed splendid dishes of "Seth Boyden," taking the premium for the best two quarts of any variety.

Mr. Durand, Irvington, N. J., exhibited a number of his new seedlings which arrived too late to come before the judges, but which we hope to see again under more favorable auspices.

In vegetables, some good Asparagus came from G. J. Olden, Rochelle Park, N. J., and Mr. James Riddle, gardener to Elisha Brooks, Esq., Inwood, N. Y., showed some ears of early corn and a small collection of early vegetables.

Cure for Spavin.—"C. G.," Rockland Co., N. Y. The cold-water cure for bog spavin is applied in the following manner. Take a piece of cotton cloth, one yard long, tear it into strips, 3 inches wide, and sew the strips together at the ends. Make the cloth into a roll; then take the roll in the hand, and wind the cloth around the affected part of the leg. After a few turns place a piece of cork, a quarter of an inch thick, upon the cloth and over the spavin, and then again wind the cloth. If the cloth is apt to slip, wind it around the hock-joint, or put some tar upon the leg above and below the spavin, to which the cloth will adhere. The pressure exerted by the cloth, and the coolness produced by the water, in which the bandage is kept soaked, reduce the circulation, and also the heat of the parts. The bandage should be kept on the leg until a cure is effected. It should not be made so tightly as to hurt the horse.

Wire for Binding Grain.—"A. G.," N. Y. There are two or three self-binding attachments to harvesting machines in use, that use wire for binding. The only objections to wire are that it may get into the thrashing machine, and flying out with the straw, may injure persons who come within range of the fragments, and that pieces of wire may be swallowed by cattle along with the straw, and cause their death. A $20,000 cow was recently killed by a piece of wire in the stomach.

Milk from Virgin Heifers.—"G. M.," Roslyn, L. I. If a young heifer is sucked by other calves, she will easily be brought to milk. This is frequently the case, and it is but a year or two ago, since we noticed the fact that Mr. Wm. Crozier, of Northport, L. I., had two virgin heifers among his herd at that time that were in milk, one only fourteen months old, and one less than that. The fact may be taken as an indication of good milking quality

---

Importation of Pigs.—The Massachusetts Society for Promoting Agriculture, have recently imported five trios of pigs from England, one each of the large, middle, and small white breeds, and the large and small black breeds. This is the nomenclature at present recognized by the Royal Agricultural Society of England, and we think with justice and propriety. The various breeds recognized in this country vary so much in character, as to be at times undistinguishable, and this difficulty must necessarily increase rather than diminish, from the multiplicity of breeders, each of whom has a different idea of excellence or method of treatment. By and by we shall have to adopt the same nomenclature, from the utter impossibility of defining what is a small Yorkshire, or a Suffolk, or a Cheshire, a Jefferson County, or a Chester White. We hope the Massachusetts Society will adopt the nomenclature along with the pigs. The pigs are at Milwood Farm, Framingham, Mass., where those interested may inspect them.

Fish Flour.—The exhibit from Norway, to be found in the Agricultural Building at the Centennial, is conspicuous for the quantity and variety of fish and fish products. Among these may be found some biscuits made from "fish flour," a preparation invented by Mr. Anton Rosing, an accomplished Norwegian agricultural chemist, who died in 1866. These biscuits were baked before the inventor's death, and are now in good preservation, after having been kept for ten years in an unsealed jar They were intended to be applicable as food for soldiers, sailors, miners, and farmers, to whom a supply of fish, other than salted, is beyond reach. This use for the invention, however, suggests another that is of the greatest importance to us, viz., the utilization of the large quantities of fish scrap made on the coasts, as a refuse of the fish-oil manufacture, as food for stock—chiefly pigs, sheep, and poultry. The proper preparation of this material for feed, either alone, or mingled with bran, corn meal, or other products of grain, would doubtless be a great economy, both for feeding and enriching the manure. Mrs. Anton Rosing, the widow of the inventor, now controls the manufacture, and would gladly communicate with parties here in reference to it.

Some Questions as to Hogs.—"A. A. V.," Summit Co., Ohio. Oat straw is not injurious to young pigs; on the contrary, being soft, it makes a better bedding for them than any other kind of straw. It is, however, too valuable, as fodder for cattle or horses, to be used for bedding, when earth, sand, leaves, or any other dry absorbent can be procured. To decide which is the most profitable breed of hogs for a farmer to keep, is more than one person could do. The whole Swine Breeder's Convention failed to decide this question either for themselves or for others. Any good pig is a profitable animal to keep, and there are good pigs of all the established breeds. A farmer should procure a thoroughbred boar of the breed he most fancies, and then raise half-bred pigs from the best common sows he can find. It does not pay a farmer to keep all thorough-breds for the most profit; he should raise grades and feed and keep them well. The Essex pigs are entirely black.

Suffolk, or Small Yorkshire.—"L. P. W.," Quincy, Ill. The difference between these two breeds of pigs would be difficult to decide. Our modern improved breeds of pigs are all made up by crosses, which have been made to suit the fancy of breeders, and therefore different strains show great variety. It would not make a Suffolk anything else than a Suffolk, if a cross of small Yorkshire was used for a distinct purpose, and the produce then bred with the Suffolks again, any more than the Berkshires or Essex are made other than what they were by a "*dash*" of Neapolitan blood; or a Cotswold sheep would be made something else by a cross of Leicester blood. If the pigs are improved, much discretion may be allowed to a capable and judicious breeder.

Sheep-Raising in the West.—"D. F. E.," Strasburg, Va. Perhaps the safest plan for any person, who wishes to undertake sheep-raising at the West, would be to spend a year in learning the business, and seeking a good location in the locality which he may choose. Perhaps Kansas, Nebraska, or Colorado, on the whole offer the best opportunity. One might visit Hutchinson in Reno Co., on the Atchison, Topeka and Santa Fe railroad; Salina, Ellsworth, or Victoria, on the Kansas Pacific railroad; Lincoln, Neb., on the Burlington and Missouri railroad, and then look along the Union Pacific railroad in Nebraska and Colorado, choosing a location where best suited. The cost would be small compared to what might be lost by making a hurried location.

Corn or Wheat for Poultry.—"G. Q. P.," Culpepper Co., Va. "Scientific" journals, so called, are not always trustworthy as to their statements. That corn does not provide sufficient fat or albumen for the requirements of a laying hen, while wheat supplies these necessaries in abundance, is incorrect as to the corn; for corn contains five times as much fat as wheat, and more than three-fourths as much as albuminoids. In fact, corn is a richer food for hens than wheat. Also that "corn-fed hens do not lay, while wheat-fed ones do," is a mistake. But a change from corn to wheat is healthful and advisable, not that corn is not sufficiently nutritious, but that a variety of food is well for all animals.

Feeding Grain to Calves.—"G. C. P.," Wapello Co., Iowa. To feed raw grain to a young calf would be injudicious; but to give a well-boiled gruel of oat, wheat, or corn meal in moderation, until the calf became at least three or four months old would be useful, then it could digest a moderate quantity of meal.

Goats versus Rats.—"W. L. R.," Chillicothe, Ohio. It is a very prevalent opinion that rats will not stay where goats are kept, and if this is a fact, we must say we respect their judgment. We cannot say from our own knowledge as to this, but a friend who some years ago took a farm that was overrun with rats, assures us that they have disappeared since some Angora goats were brought on to the premises. Our own farm was at one time infested with rats, but they disappeared upon the application of vigorous measures, although no goat was upon the place. So the question has two points of view, and may be considered a doubtful one.

Right and Left Again.—Which is right and which is left, in the case of twining vines climbing a pole, is still a puzzle to some of our readers. We thought we had set it all right in the February number, p. 75, but one important little matter was left out of our explanation, which quite spoiled it. We will do it over, and hope for better success. We should have attended to it before, but have been in such a whirl of occupation for the last two or three months that we could hardly tell our right hand from our left, and the letters of our correspondents got mislaid.—Now then: When we told our original correspondent to stand before his bean pole and see which direction his bean-vine took, we expected him to *face the pole*; but we forgot to tell him to "face the music," we mean the pole, all the time he was marching round. Keep your eye on the pole and go round. You will go to the right if you follow your bean-vine, to the left if you follow your hop-vine. By omitting to state this, and telling our correspondent to "walk round," we led him into the muddle instead of out of it. Probably our correspondent will add that it is an awkward business going round a pole crab-fashion. We will save him the trouble by asking him to come up to the pole on any side he likes. On whichever side he comes to it he will see his bean-vine turning from his left to his right as it ascends, his hop-vine from right to left.

Failure to Grow Potatoes in Colorado.—"R. D. R.," Trinidad, Col., writes, that potatoes are not a sure crop in that locality, the tops growing profusely, but the tubers are very small, and he asks what is to be done about it. We should be glad to hear from some of our readers in Colorado or New Mexico in relation to this matter. A case which might give a clue to the cause, and a remedy, happened in our experience. A piece of heavily timbered ground was cleared and burnt over, the ashes being spread upon the burned soil, which was planted to potatoes. The crop was very large as to vines, but nothing as to tubers, except in a small piece where the tops were mowed down. Here the crop was very fair. The next year, after the ashes had been leached by a season's rains, a very large crop of potatoes was taken off. Is the soil in question rich in potash, as a feldspattic or granitic soil might be in that dry region? If so, copious irrigation might improve it.

How to Mend a Fowl's Broken Leg.—When a valuable fowl happens to break a leg, the accident may be repaired with the greatest ease. Place the bird upon the saddle described on p. 96, March No., and carefully adjust the broken limb. If it is the thigh bone that is broken, cover the injured part with mucilage or glue, plastering the feathers down on to the flesh; then cover the leg with a thick coat of the glue or mucilage, and sprinkle flour upon it until the moisture is absorbed. If the lower bone is broken, do the same, and afterwards cover the part with a few thicknesses of brown paper, softened in the mucilage or glue. In an hour, or as soon as dry, the dressing will be firm, and the bird may be set at liberty. To prevent injury to the dressing, keep the bird by itself in a quiet place for a few days.

Swiss Cows.—"G. J. A.," Worcester. The Swiss cows have a good reputation as abundant and rich milkers, but we have no information as to the average percentage of cream contained in their milk. At present the Jerseys and Guernseys stand in this respect ahead of all other cows, their milk yielding on an average about 25 per cent of cream, and some cows of these breeds have surpassed this.

The Best Feed for the Growth of Wool.—"Wool-grower," Beatrice, Neb. For the best growth of wool upon Merino sheep, corn is generally considered to be the best feed. But cheapness and convenience are to be considered, as well as healthfulness. Corn is the cheapest and most convenient feed in the Western States, and although some other additional feeds might be desired, yet we know of none, unless it may be linseed oil-cake, which is made in the West, and can be procured cheaply, that could be added to it profitably. For long-wool sheep corn alone is not desirable, as it does not produce the silky fiber that is so much valued. For these sheep roots should be added to the corn, and sugar beets and mangels are best in the West, where the soil and climate are favorable for their growth.

Floral Decorations for Dwelling Houses, by Annie Hassard. London and New York, Macmillan & Co. All readers of English horticultural papers are aware that Miss Hassard occupies a high position as a floral decorator, as she has taken many prizes for her designs, and is a frequent contributor to the journals. The present volume (said to have been Americanized), gives all the mechanical operations and designates the materials to be used for table, room, and window decorations, the making of hand and button-hole bouquets, and for the arrangement of flowers and plants for various decorative purposes. The work is abundantly illustrated, not forgetting our old window box of Dracænas. Some years ago we had in our dining-room a window box containing Dracænas, which we thought effective, and making a pencil sketch, had an engraving made of it for "Hearth and Home." It is very amusing to see how that has gone the rounds of books on window gardening, horticultural journals, and now, after the plants have been thrown out for years, they stare us in the face in the present work, where, by the way, they are in very good company.

What is a Month?—"W. A. H." When a man agrees to work for eight months, the time counts according to the calendar, as from the first of one month, or any other day of it, to the first of another month, or any other day corresponding to that upon which the term began. Twenty-six working days may be a month, or may not, and there is no binding rule or custom anywhere, that we know of, by which that number of days is held to be a month. There are 313 working days in a year, and 12 months of 26 days each, would give but 312 days in the year, so that an arbitrary rule making 26 days to be a month, would cause a loss of one day to the employer. Where a man is hired by the month, it is the usual custom, as far as we know, and as we have practiced it, to make no deduction for legal holidays. On those days the hired man is expected to do necessary work, such as feeding and cleaning the stock, but no more. Where he is paid at a fixed daily rate, all holidays or idle days are deducted, and he is paid only for the actual time he has worked. In making agreements there should always be a written contract, which would prevent disputes and misunderstandings, either wilful or accidental.

Warm Slops for Pigs.—"G. S.," Mason Co., Ill. Pigs, having a thick protective layer of fat beneath their skin, and being fed upon concentrated and highly carbonaceous food, do not need to have warm feed. We have not found warm feed to agree with them and prefer to give it cool, or at most, only very slightly warm. But slops given in a half frozen condition are to be avoided as injurious and wasteful. In considering the question of cooked food fed while warm, as a saving of vital heat, we must not overlook the necessity for consulting the nature of the digestive organs and accommodating our practice to their peculiarities. There is a "golden mean" to be observed in all departures from natural conditions, and wide or sudden divergences are seldom wise.

Tumor on the Eye.—"A. McF.," Napa Co., Cal. Cows sometimes suffer from tumors of a fungoid character, which grow from the corners of the orbit of the eye. These frequently originate in the "hook" of membrane, which sweeps and cleans the eye-ball. When the tumor becomes enlarged, bleeds, and is highly inflamed, it is sometimes necessary to have it cut away by a surgeon. But this operation, which is rarely entirely successful, may often be avoided by treating the tumor with a safe caustic, such as nitrate of silver. A solution of 10 grains of this, sold as lunar caustic, to one ounce of distilled or pure rain water, should be applied twice a day to the tumor, with a camel's-hair pencil. This should be done as soon as possible. When the knife has been used, some portions of the tumor remain, and these will grow and enlarge if they are not at once removed by the caustic. The application of the caustic should therefore, in nearly all cases, follow the use of the knife. These tumors are known as *fungus hæmotodes*, and generally result from a scrofulous condition of the animal. Consequently they are rarely entirely cured, but when repressed in one place, they appear in another. An animal troubled with them is not a desirable one to breed from, as the disease is hereditary.

Steep for Seed Wheat.—"Farmer," Independence, Iowa. No wheat should be sown without being steeped, as a preventive of rust and smut. These are supposed, with good reason, to be different developements of the same fungoid plant which preys upon the wheat plant, and the spores of which adhere to the seed and are sown with it. The steep we have always used is a solution of 4 ounces of bluestone (sulphate of copper), dissolved in one gallon of water; this is poured over 5 bushels of seed, which is left to soak for 24 hours.

The Effect of a low Temperature upon Milk and its Products.—L. H. Agme, New York, sends the following as a translation of a note of M. Eugene Tisserand, of Paris, in relation to the effects of a low temperature upon milk, cream, butter, and cheese: "If milk, immediately after being drawn from the cow, be submitted to different temperatures, from 32° to 96° Fahr., and be kept at the initial temperature during twenty-four or thirty-six hours, the following facts are observed: 1. The separation and rising of the cream is proportionately more rapid as the temperature is nearer 32° Fahr. 2. The volume of cream is greater, as the temperature to which the milk is subjected is lower. 3. The transformation into butter is also more productive when the temperature is lower. 4. Finally, the cream, butter, and cheese, are all of better quality in the latter case."—If the above observations are well founded, it would seem that our gradual progress towards the cooler setting of milk and the use of ice in dairies is justified and proper. The Hardin process, which we recently described and illustrated, is based upon the principle involved in the above note, and the results of that process, so far as it has been tested, have appeared to be very much the same as above observed by M. Tisserand.

THE FARMER'S VETERINARY ADVISER

BY

Prof. J. Law

CORNELL UNIVERSITY

ITHACA, N.Y.

PRICE $3 BY CHECK OR MONEY ORDER

AMERICAN

VETERINARY COLLEGE.

INCORPORATED 1875.

141 West 54th St., betw. 6th & 7th Avs.,

NEW YORK CITY.

The regular course of Lectures in this Institution will commence on Tuesday, 3d of October, 1876, and terminate late in Feb., '77. Apply for Particulars and Circulars to

A. LIAUTARD, M.D.V.S.,

Dean of the Faculty.

IMPORTANT

TO

Flock Masters and Sheep Farmers.

THE SCOTCH SHEEP DIPPING AND DRESSING COMPOSITION

effectually cleans the stock, eradicates scab, destroys ticks and all parasites infesting sheep, and produces clips of unstained wool that commands the highest market price.

PRICE LIST:

For 800 Sheep,	200 lbs.,	(package included)				$24.00
" 400	" 100	"	"	"		13.00
" 200	" 50	"	"	"		7.00
" 100	" 25	"	"	"		3.75

Send for Circular. District Agents wanted. Address

MALCOLM McEWEN, Scotch Sheep Dip Manufactory, Portland Avenue, Louisville, Ky.

ENGLISH YORKSHIRE PIGS.

Carefully bred by an experienced breeder, from stock imported directly from Yorkshire, England, with a view to perfection in all points. For practical utility these hogs are unexcelled. They are medium size, white color, light-haired, very prolific, quiet, good nurses, and ready fatteners. Prices to suit the times. Circulars mailed upon application. Shipped to destination at my risk, and warranted as represented. Also Holstein and Short-horn Cattle.

Marlborough Stock Farm, JOS. KNIGHT, Propr., Newburyport, Mass. P. O. Box 352.

100 Pair Extra Chester Whites,

25 Pair Essex, Berkshire and Small Breed Yorkshire Pigs.

Now ready to ship. All first-class, well bred, and guaranteed to give entire satisfaction. 6 Short-horns for family use. Also Alderney and Ayrshire Calves, Southdown and Cotswold Sheep of superior quality, High Class Land and Water Fowls, Ground Bone, Scraps, Condimental Food, &c., &c. Circulars free. BENSON & BURPEE,

Successors to W. ATLEE BURPEE.

223 Church St., Philadelphia, Pa.

ESSEX PIGS.

Pure, healthy, and very fine. Now ready to ship.

JOSEPH HARRIS, Moreton Farm, Rochester, N. Y.

PREMIUM CHESTER WHITE, BERKSHIRE and ESSEX PIGS, bred and for sale by

GEO. B. HICKMAN, West Chester, Chester Co., Penn.

Also fancy poultry. Send stamp for circular and price list.

POLAND CHINA HOGS. — Pigs for sale reasonable. Send for price of pigs. Address

ISAAC H. GLASGOW, Oxford, Butler Co., Ohio.

J. Cheston Morris, M.D., "Fernbank," near West Chester, Pa., breeder of *Devons, Southdowns* and *Berkshires*. May be seen on Thursdays.

For Sale at Fleetwood Stock Farm, near Frankfort, Ky., Thoroughbreds, Trotters, Jersey Cattle, &c. Address J. W. HUNT REYNOLDS.

J. C. & D. PENNINGTON, Paterson, N. J.— Breeders of Herd Register Jersey Cattle. Also Black Hamburg and L. Brahma Fowls.

GAME FOWL, Carrier Pigeons, and Sporting Dogs, bred and shipped by J. C. COOPER, Cooper Hill, Limerick, Ireland. Winner of Gold Medals at Paris and New York.

Black Bass for stocking ponds—Pekin Ducks, Bronze Turkeys, descended from a pair weighing 62 lbs. Jersey Cattle, A. I. C. C. R., and Cotswolds, at low prices. Address W. CLIFT, Mystic Bridge, Ct.

Pure-bred Cotswold Sheep

Yearling Rams and Ram Lambs for sale at reasonable prices. Also a few choice ewes. JOSEPH HARRIS,

Moreton Farm, Rochester, N. Y.

N. GUILBERT, Evergreen Farm, Gwynedd, Pa., Importer and Breeder of Improved Blooded Live Stock, Horses, Cattle, Cotswold and Southdown Sheep, Chester, Berkshire and Yorkshire Pigs, Toulouse, Bremen, Hong Kong, White China and Wild Geese, Cayuga, Rouen, Aylesbury and Musk Ducks, Bronze, Blue, Buff and White Turkeys, Dorkings, Brahma, Cochin, Guinea and all other Fowl, Deer, Swans, Peacocks, Pigeons, Eggs, &c., at low prices. Best Breeds of Dogs and Maltese Cats, Rabbits, Ferrets, Guinea Pigs, White Mice, &c. Fine Milch Cows always on hand.

Thoroughbred fast-pacing Morgan Stallion, cheap.

Handsome English Greyhound Dog, and pair Black Carriage Horses. Also pure white Muskrat.

WILLIAM CROZIER,

BEACON HILL,

NORTHPORT, LONG ISLAND, N. Y.,

Breeder and Importer of Clydesdale Horses, Ayrshire and Jersey Cattle, and Improved Berkshire Hogs.

POLAND CHINA OR MAGIE HOGS.

L. L. REED, Auburn, Geauga Co., Ohio, Breeder and Shipper of Cotswold Sheep, Magie Hogs, Bronze Turkeys, and all the leading kinds of fancy Poultry. Send for Circular, free.

DAY'S AUTOMATIC INCUBATOR.

Neatest, simplest, best. Heat entirely self-regulating. Provides for the young chicks. Capacity, 220 eggs. Price, $50. See July *Agriculturist* 1876. Address

DAY BROS. & CO.,

92 Linden Avenue, Baltimore, Md.

HIGH CLASS

LIGHT BRAHMAS

A Specialty.

Exceedingly fine chicks raised this season from my two yards of Pedigreed, non-related fowls.

CHICKS FOR SALE NOW.

Do not wait until spring and pay two prices. Send for circulars and price list describing stock at once.

WM. B. WONDERLY,

Dayton, Ohio.

DOWNING'S

LANDSCAPE GARDENING.

A TREATISE ON THE

Theory and Practice of Landscape Gardening

ADAPTED TO

NORTH AMERICA;

WITH A VIEW TO THE

Improvement of Country Residences.

Comprising historical notices and general principles of the art, directions for laying out grounds and arranging plantations, the description and cultivation of hardy trees, decorative accompaniments of the house and grounds, the formation of pieces of artificial water, flower gardens, etc.,—with

Remarks on Rural Architecture.

By the late A. J. DOWNING, Esq.

WITH A SUPPLEMENT,

containing some remarks about country places, and the best methods of making them; also an account of the newer deciduous and evergreen plants, lately introduced into cultivation, both hardy and half-hardy,

AND A SECOND SUPPLEMENT,

bringing down to the present time some brief account of the various trees and shrubs which have been introduced since the former Supplement was published, (in 1859),

By HENRY WINTHROP SARGENT.

BEAUTIFULLY ILLUSTRATED,

with thirty-nine engravings on wood, six on stone, and six on steel, one of which is a fine portrait of the author.

Price, Post-Paid, - - - $6.50

ATWOOD'S

Country and Suburban Houses.

By D. T. ATWOOD, ARCHITECT.

PRICE, POSTPAID, $1.50.

This work is finely illustrated with about one hundred and fifty engravings, and gives instruction upon all points, from the selecting of a place to build to the perfect completion of the house.

CONTENTS: Hints to House Seekers; The Plan; Water Supply; Kitchen and Ventilation; Proportion; The Style; The Foundations; Cisterns and Filterers; Superstructure Walls; Brick; Description of Ancient Methods; Concrete Walls; Proportions; How to Lay a Wall; American Building Block; En Pise; Wooden Walls; External Covering of Frames; the Roof; Timber—its Properties and Preservation; Painting; Designs and Plans of Cottages, Country Houses, Churches, Stables, etc.

Either of the above books sent post-paid on receipt of price by

ORANGE JUDD CO., 245 Broadway, New York.

BACK VOLUMES

OF

American Agriculturist.

The publishers of the *American Agriculturist* can supply any of the back volumes of that paper from the Sixteenth to the Thirty-fourth. These volumes contain more varied and interesting information on all matters pertaining to the Farm, Garden, and Household, than can be obtained in books costing three times as much money. Price of each bound volume, at the Office, $2.00; sent post-paid, $2.50.

ORANGE JUDD COMPANY, 245 Broadway, N. Y.

GOOD BOOKS.

RURAL AFFAIRS.

By JOHN J. THOMAS.

SEVEN VOLUMES NOW READY.

Price, Post-paid, $1.50 Each, Sold Separately or Together

Being a reprint on larger, finer and heavier paper, of the very valuable articles in every department of Rural Economy, which have heretofore appeared in annual numbers, from 1855 to 1875, inclusive, under the title of the *Annual Register of Rural Affairs*. These volumes contain about 340 pages each, or *over Twenty-Three Hundred Pages* in all, of reading matter, and are illustrated with more than *Three Thousand Engravings*, a large part of them from drawings and designs made expressly for the purpose. A brief Abstract of the Contents of the several Volumes is subjoined, although necessarily so compressed as to convey but a very incomplete idea of the number and variety of the topics embraced, and the concise and practical manner in which they are treated:

VOLUME ONE.

FOUR HUNDRED AND FORTY ILLUSTRATIONS.

Country Dwellings.—Laying Out Grounds.—What Fruits to Choose. — Domestic Animals. —Fruit Culture. — Farm Buildings.—Farm Implements.—Butter and Cheese Making.—Rural Economy.—Rustic Seats and Structures.—School Houses. — Weights and Measures. — Domestic Economy.

VOLUME TWO.

FOUR HUNDRED AND FIFTY ILLUSTRATIONS.

A Complete Country Residence.—Country Houses.—Fruits and Fruit Culture.—Flower and Kitchen Garden.—Farm Buildings.—Farm Management.—Farm Fences and Gates.—Domestic Animals.—Nursery Lists.—Ornamental Planting.—Implements of Tillage.—Other New Implements.—Rural and Domestic Economy.

VOLUME THREE.

FOUR HUNDRED AND FORTY ILLUSTRATIONS.

Workingmen's Cottages. — Grounds and Greenhouses. — Farm Buildings. — Architecture. — Farm Husbandry. — Weeds and Grasses.—Practical Entomology.—Fruits and Fruit Culture.—Flowers.—Vegetable Physiology.—Domestic Animals.—The Dairy.—The Poultry Yard.

VOLUME FOUR.

THREE HUNDRED AND EIGHTY ILLUSTRATIONS.

Farm Work.—Orchard and Nursery.—Kitchen and Flower Garden and Greenhouse.—Road Making.—Cheese Dairying.—Entomology.—Country Homes.—Pruning. — Poultry.—Fruits and Flowers. — Domestic Economy.—Domestic Animals.—Implements and Inventions.—Woodlands.

VOLUME FIVE.

FOUR HUNDRED ILLUSTRATIONS.

Grape Culture.—Milk Farming.—The Duck.—Turnips and their Culture.—Garden Insects.—Reapers and Mowers.—Rotation of Crops.—Small Fruits.—Shrubs.—Labor Saving Contrivances. — Vermin. — Wheat.—Hedges.—Potatoes.—Rural Improvements. — Fruits. — Strawberries.—Flowering Plants.

VOLUME SIX.

FOUR HUNDRED AND FORTY ILLUSTRATIONS.

Culture of Indian Corn.—Draining, Fencing and Wall Making.—Measuring and Mapping Farms.—Town and Country Roads.—Farm Buildings.—Culture of the Carrot.—Destructive Insects.—Plowing without Dead Furrows.—Weed Hooks and Chains in Plowing.—Plowing with Three Horses.—Fruit Culture.—Cheese Making.—Hay Making by Machinery.—Implements and Machines.—Ornamental Planting.—Domestic Economy.—Miscellaneous Papers.—The Farmer's Register.

VOLUME SEVEN.

FOUR HUNDRED AND SEVENTY ILLUSTRATIONS.

Laying Out Home Grounds.—Cooking Food for Animals.—The Great Sale of the Century.—The Circle of Fruits.—Houses of Moderate Cost.—Construction of Greenhouses.—Barns for Different Purposes.—Piggeries and Pig Raising.—Cranberry Culture in New Jersey.—Small Fruit Culture for Profit.—Ornamental Plants.—Pigeons, Management and Varieties.—Tying Knots.—Accidents and Emergencies. — Market Gardening for Profit. — Suggestions in Rural Economy.—Miscellaneous Papers.—The Farmer's Register.

ORANGE JUDD COMPANY,

245 BROADWAY, NEW YORK.

BEAUTIFYING

COUNTRY HOMES.

AN ELEGANT QUARTO VOLUME.

By J. WEIDENMANN.

PRICE, POST-PAID, $15.00.

This magnificent work is illustrated not only with numerous fine wood-engravings, but also with seventeen full-page and seven double-page colored lithographs of places already improved. It embodies the results of a long practice in landscape architecture and rural adornment, and while its teachings are in accordance with the received rules of art, they are thoroughly practical in their character. It is one of the most elegant, and ought to prove one of the most useful works ever issued in the country. The work, both in its letter-press and colored lithographs, is beautifully printed, and it is elegantly bound in beveled boards.

ORANGE JUDD COMPANY,

245 BROADWAY, NEW YORK.

WARING'S

Books for Farmers.

DRAINING FOR PROFIT AND DRAINING FOR HEALTH.

By GEO. E. WARING, Jr.,

Engineer of the Drainage of Central Park, New York.

CONTENTS.

Land to be Drained; How Drains Act; How to Make Drains; How to Take Care of Drains; What Draining Costs; Will It Pay? How to Make Tiles; Reclaiming Salt Marshes; House and Town Drainage.

EXTRACTS FROM NOTICES BY THE PRESS.

He (the author) describes the action of draining upon the soil, the construction of single drains and systems of drains, the cost and the profit of thorough drainage, the making of tiles, and the reclaiming of salt marshes, treats sensibly of malarial diseases, and closes with a chapter which should be widely read, on house drainage and town sewerage in their relations to the public health.

[*Portland (Me.) Press.*

Nowhere does this book merit a wider circulation than in the West. Every year adds to the thousands of Dollars lost to this State from want of proper surface drainage, to say nothing of the added gain to result from a complete system of under-drainage. This book will prove an aid to any farmer who may consult it.

[*Chicago (Ill.) Republican.*

A Book that ought to be in the hands of every Farmer.

SENT POST-PAID, - - - - PRICE, $1.50.

EARTH-CLOSETS AND EARTH-SEWAGE.

By GEO. E. WARING, Jr. (of Ogden Farm).

INCLUDING:

The Earth System (Details).
The Manure Question.
Sewage and Cess-pool Diseases.
The Dry-Earth System for Cities and Towns.
The Details of Earth Sewage.
The Philosophy of The Earth System.

With Seventeen Illustrations.

Paper Covers, Price, Post-paid, 50 cts.

ELEMENTS OF AGRICULTURE.

A BOOK FOR YOUNG FARMERS,

By GEO. E. WARING, Jr.,

Formerly Agricultural Engineer of the Central Park, in New York.

CAREFULLY REVISED.

CONTENTS.

The Plant; The Soil; Manures; Mechanical Cultivation; Analysis.

The foregoing subjects are all discussed in plain and simple language, that any farmer's boy may understand. The book is written by a successful *practical farmer*, and is full of information, good advice, and sound doctrine.

HORACE GREELEY says of it: "Though dealing with facts unfamiliar to many, there is no obscure sentence, and scarcely a hard word in the book; its 254 fair, open pages may be read in the course of two evenings and thoroughly studied in the leisure hours of a week; and we pity the man or boy, however old or young, who can find it dull reading. Hardly any one is so wise that he will not learn something of value from its perusal; no one is so ignorant or undeveloped that he cannot generally understand it; and no farmer or farmer's son can study it thoughtfully without being a better and more successful cultivator than before."

SENT POST-PAID, - - - - PRICE, $1.00.

Either of the above books sent post-paid on receipt of price by

ORANGE JUDD CO., 245 Broadway, New York.

THE AMERICAN

Cattle Doctor.

[*OCTAVO.*]

A COMPLETE WORK ON ALL THE DISEASES OF

CATTLE, SHEEP, AND SWINE,

including every Disease peculiar to America, and embracing all the latest Information on the Cattle Plague and Trichina; containing also a Guide to Symptoms, a Table of Weights and Measures, and a List of Valuable Medicines.

By GEO. H. DADD, V. S.,

Twenty-five years a Leading Veterinary Surgeon in England and the United States, and Author of the "American Reformed Horse Book."

I.—Diseases and Management of Cattle.

Showing how, by means of the remedies found to be so useful in the author's practice, to overcome the many troublesome and usually fatal diseases of cattle.

The proper care and management of cattle during calving are plainly set forth.

The relative value of different breeds is fully discussed.

In this division will be found, in full, the History, Causes, Symptoms, and Treatment of RINDERPEST or CATTLE PLAGUE.

II.—Diseases and Management of Sheep.

Beginning with a most valuable chapter on the *Improvements of our Breeds of Sheep.* Such diseases as Rot, Yellows, Foot-rot, Grubs, etc., are fully treated.

III.—Diseases and Management of Hogs.

Commencing with an able article on the importance of Cleanliness and Pure Air for Hogs. The various diseases of this valuable animal, with their Prevention, Causes, and Cure, receive full attention. The great majority of American farmers are largely interested in the *most reliable* treatment of that scourge among hogs—Hog Cholera. After years of practice in Illinois, the author confidently presents his Remedy for this destructive malady, as the most successful one yet discovered, and it is so simple as to be within easy reach of all.

376 pages, Octavo, Illustrated. Price, Post-paid, $2.50.

THE AMERICAN

REFORMED HORSE BOOK.

[*OCTAVO.*]

A Treatise on the Causes, Symptoms, and Cure of every Disease incident to the Horse, including all Diseases peculiar to America, and which are not treated of in works based upon the English works of Youatt, Mason, and others. Embracing also full details of Breeding, Rearing, and Management on the

REFORMED SYSTEM OF PRACTICE.

By Prof. GEO. H. DADD,

Veterinary Surgeon. "Author of Anatomy and Physiology of the Horse," and late Professor of Anatomy and Physiology in the Veterinary Institute of Chicago, and for over 25 years a Regular Practicing Veterinarian.

This is a fresh book, the result of a lifetime of labor and research on the part of one of the foremost Veterinarians of the age. Years ago, Dr. Dadd perceived that incalculable loss was being entailed upon stock owners every year by the reckless, unnatural, unscientific, and cruel modes of treatment which were so generally practiced upon the Horse. **Burning, Blistering, Bleeding** by the gallon, and the giving of **Poisonous Drugs** were the order of the day (and we are sorry to say such practices still find learned (?) advocates even in our day), and the result was that they *killed more than they cured.* Actuated by a laudable desire to rescue so noble an animal from such "heroic practice," Dr. Dadd adopted and strenuously advocated the Reformed System of Practice, which, under the guidance of such men as Wooster Beach, John C. Gunn, and others, rose rapidly into popular favor in human practice, and demonstrated beyond a doubt that *nature's remedies* are the most uniformly successful. Such was Dadd's success that he became widely known, and it was no unusual thing for him to be sent for, hundreds of miles, to attend valuable horses. His career as a practicing Veterinary Surgeon has been one of rare success, and deeming it his duty to spread abroad among his countrymen a knowledge of Reform Principles, as applied to the Horse, he has prepared this work, and asks that it be candidly examined. Being a thoroughly American Work, it quotes foreign authors but very little. It aims to treat fully and plainly, on rational principles, every ill that Horseflesh is heir to, including those **complaints peculiar to this country,** and which have hitherto been but very imperfectly treated of by authors aspiring to be educators of the public on Veterinary Science.

442 pages, Octavo, Illustrated. Price, Post-paid, $2.50.

Either of the above books sent post-paid on receipt of price, by

ORANGE JUDD CO., 245 Broadway, New York.

Gardening for Pleasure.

A GUIDE TO THE AMATEUR IN THE

Fruit, Vegetable, and Flower Garden,

WITH FULL DIRECTIONS FOR THE

Greenhouse, Conservatory, and WINDOW GARDEN.

By PETER HENDERSON,

AUTHOR OF "GARDENING FOR PROFIT," AND "PRACTICAL FLORICULTURE."

ILLUSTRATED.

It is one of the best guides to window-gardening we know of. The fact is, that the number of plants that can be successfully grown in window-gardening is very limited, and though it is possible to make a very large list of those which may be grown, if unusual pains be taken, the general cultivator wishes only to undertake those which promise to be successful with a moderate expenditure of time and attention. The rules to be observed in order to succeed with window plants, are very few, and the whole story is plainly told.—*Christian Advocate*, Pittsburgh, Pa.

Price, Post-paid, $1.50.

AN EGG FARM.

THE MANAGEMENT OF POULTRY IN LARGE NUMBERS.

By H. H. STODDARD.

BEING A SERIES OF ARTICLES WRITTEN FOR THE AMERICAN AGRICULTURIST.

WITH OTHER ARTICLES.

ILLUSTRATED.

CONTENTS.

Introduction.—Plan of Farm.—Manner of Feeding.—Location of Farm.—Kind of Soil.—Crops on the Farm.—Supplying Water and Food.—Collecting and Storing Dry Earth.—Houses for Layers.—Feeding House for Winter.—Houses for Sitters.—Arrangements for Breeding Stock.—Fowls for Layers.—Fowls for Sitters.—Management of Breeding Stock.—Coops for Chickens.—Feeding Chickens.—Setting the Eggs.—Management of Sitting Fowls.—Testing the Eggs.—Winter Management.—House for Early Hatched Pullets.—Shelters for Fowls and Chickens.—Kind of Food.—Building for Storing and Cooking Food.—Management of Young Chickens.—Feeding and Sheltering Chickens.—Additional Buildings.—General Conclusions.—Farm Poultry House.—Poultry Farming.—Poultry Keeping as a Business.

Price, post-paid, paper covers, 50 cts.; cloth, 75 cts.

NOTICES BY THE PRESS.

The work is very practical, all the illustrations and descriptions of building being of those of the plainest and cheapest construction, within the reach of any one who keeps a dozen fowls. The directions for management are plain, and evidently the result of the experience of the author.—*Country Gentleman*, Albany.

Everything pertaining to the production of eggs and the breeding and raising of poultry is here given, and no difficulty to be avoided or point in which labor may be saved, seems to be unprovided for.—*The Salem Gazette*, Salem, Mass.

This is a handsomely illustrated little work on the management of poultry in large numbers. It will no doubt be a valuable addition to our poultry literature.—*Colman's Rural World*, St. Louis.

It contains a vast amount of information in a little space in regard to the management of poultry in large numbers. It contains about 100 pages, and is nicely illustrated with plans of buildings, implements, breeds of fowls, etc., etc.—*Ohio Farmer*, Cleveland.

It gives a full and instructive account of the management of poultry in large numbers, with plenty of excellent illustrations.—*Christian Register*, Boston.

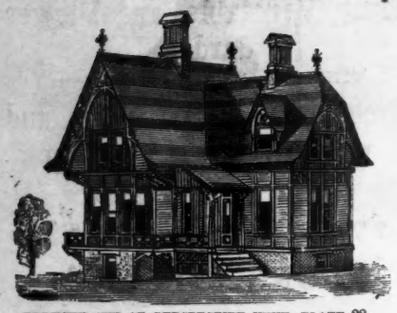
It gives in a clear and comprehensive manner the best plans for breeding stock and management of young chickens, with cuts of the most economical houses, and showing fanciers how to make the business a profitable one.—*Stoneham Sentinel*, Stoneham, Mass.

Either of the above books sent post-paid on receipt of price by

ORANGE JUDD CO., 245 Broadway, New York.

PRACTICAL BOOKS,

Suited to the wants of Architects, Carpenters, Builders, and all who contemplate building or remodeling Frame or Brick Buildings of any Size or Cost.



REDUCED CUT OF PERSPECTIVE VIEW, PLATE 28.

WOOLLETT'S VILLAS AND COTTAGES;

OR,

HOMES FOR ALL.

A BOOK FOR THE PEOPLE.

Showing Plans, Elevations and Views of twelve Villas and ten Cottages, being a Collection of Dwellings suited to various individual wants and adapted to different localities.

This is a most picturesque and pleasing work, and is well adapted to the public wants. One Vol., oblong 8vo., of forty 8x12 plates. Cloth; Price, Post-paid, $8.00.

Atwood's Modern American Homesteads

Containing 46 plates, showing a variety of designs for Homesteads, Stables, Ice and Milk Houses, Details, etc., all to scale; also Specifications and Description. 8vo. Cloth. $3.50.

Detail Cottage and Constructive Architecture.

Containing Seventy-five large Lithographic Plates, under the Direction of A. J. Bicknell, showing a great variety of Designs for Cornices, Brackets, Windows and Window Caps, Doors, Piazzas, Porches, Bay and Dormer Windows, Observatories, Towers, Chimney Tops, Balconies, Canopies, Scrolls, Gable and Sawed Ornaments, Fences, Stairs, Newels, Architraves, Mantels, Plaster Finish, etc., including Forty-five Perspectives, Elevations, and Plans of Modern Designs for Cottages, with Details, and Eighteen Elevations of Summer Houses, Villas, Sea-Side Cottages, and Country Houses, together with Fourteen Designs of Street and Store Fronts, with inside finish for Stores and Banks; also, Framings for Dwellings, Barns, Exhibition Buildings, Roofs, Bridges, etc., etc., making in all a Practical Book for Architects, Carpenters, and all who contemplate Building or Remodeling Wood, Stone, or Brick Buildings. One large Quarto Volume, sent FREE by mail or express on receipt of price, $10.00.

Wooden and Brick Buildings, with Details.

Under Direction of A. J. Bicknell. Containing One Hundred and Sixty Plates of Plans, Elevations, Views, Sections, and Details of Villas, Cottages, Farm Houses, Country Seats, Street Fronts for Dwellings, Store Fronts, Banks, Athenæum, Library, Town Hall, Masonic Hall, Hotels, Opera House, Court House, School Houses, Churches, Railway Stations, Stables and Carriage Houses, Out-Buildings, Summer Houses, Ice Houses, Boat House, Gateways, and Fences; including a Double Plate, showing a Street View of Twelve Dwellings, and a variety of miscellaneous Exterior and Interior Designs and Details for Plaster, Wood, Brick, and Stone Finish; also, Descriptive Letterpress, Specifications, New York Form of Contract, Schedule of Charges endorsed by the American Institute of Architects, etc. Elevations, Plans, and Details to Scale.

2 Volumes. Large Quartos. Vol. 1 contains Plates 1 to 80, Vol. 2, Plates 81 to 160, each strongly bound in half leather, sent free by mail on receipt of price, $18.00. When desired, the Volumes will be supplied separately on receipt of $9.00.

BICKNELL'S

Village Builder, with Supplement.

Shows Elevations and Plans for Cottages, Villas, Suburban Residences, Farm Houses, Stables and Carriage Houses, Store Fronts, School Houses, Churches, Court Houses, and a Modern Jail. Also Exterior and Interior Details for Public and Private Buildings, with approved form of Contract and Specifications, containing Seventy-seven Plates, drawn to Scale giving the Style and Cost of Building in different parts of the country, being an original work, comprising the Designs of 20 Architects, representing the New England, Middle, Western, and South-Western States. One large Quarto Volume. Price, with Supplement, Post-paid, $12.00.

SUPPLEMENT TO

Bicknell's Village Builder.

Contains Twenty Plates, showing Eighteen Modern and Practical Designs for Country and Suburban Residences of Moderate Cost, with Elevations, Plans, Sections, and a Variety of Details, all drawn to Scale; also, a full set of Specifications, with approved form of Contract, and Estimates of cost. One superb quarto volume. Price, post-paid, $5.00.

Carpenters and Builders' Assistant, And Wood-Workers' Guide.

By L. D. GOULD, Architect and Practical Builder.

Containing Twenty-three Plates, fully described. Also, Tables of the Strength of Materials, Length of Braces, where the Run is given, and Length of Run where the Brace is given, Technical Terms used by Carpenters, etc., etc. 8vo. volume, bound in cloth. Price, post-paid, $3.

The American Stair-Builders' Guide.

By L. D. GOULD.

Illustrated by 32 Original Plates fully described and drawn to scale. One 8vo. volume, price, post-paid, $4.00.

Guillaume's Interior Architecture.

Containing Twelve Folio Plates, showing Twelve Designs and Eight Sections for Doors, Stairs, Window Finish, Mantels, Wainscoting, &c., and Two Elevations for Dwellings in French and Italian Style. One folio volume, flexible cloth, post-paid, $3.00.

A REVISED AND ENLARGED EDITION OF

Hallett's Specifications,

To which has been added the Form of Contract in general use in the City of New York, which has also been revised, and now first published in its present form. Blank specifications for Frame Houses, costing from Two Thousand to Twenty Thousand Dollars, carefully written by William T. Hallett, Architect. They consist in their various sections of Carpenter and Joiner, Tinner, Plumber, Slater, Painter, and Mason. Printed on large size letter-paper, and neatly bound in paper cover. Price, $1.75 per set.

Hallett's Builder's Contracts, 10 Cts.

Loth's Practical Stair-Builder, $10.00.

Full Duplicate Sets of Drawings for

ATWOOD'S

Swiss Gothic Model Frame Cottage.

Comprising all the working Plans, Elevations, principal Exterior and Interior Details, as follows: Plates 1, 2, 3, and 4, size 22x28 in., show all the Elevations and Plans, scale, 4 feet to an inch. Price, $5. Plates 5 and 6, size 22x28 in., show the principal Exterior and Interior Details, scale, ¼ full size. Price of Details, including complete Specifications and Bill of Materials, $5.00.

Wither's Church Architecture.

Illustrated with Plans, Elevations and Views of Twenty-one Churches and Two School-Houses, Photo-lithographed from Original Drawings; also, full descriptive letter-press, which includes numerous Engravings on Wood, showing construction and Details. One large volume of fifty-one 9x14 plates, substantially bound in extra cloth, sent by mail or express, to any part of the United States, upon receipt of price, $15.00.

ORANGE JUDD COMPANY,
245 BROADWAY, NEW YORK.

THE

Shepherd's Manual.

A PRACTICAL TREATISE ON

THE SHEEP.

DESIGNED ESPECIALLY FOR

AMERICAN SHEPHERDS.

By HENRY STEWART.

ILLUSTRATED.

NOTICES BY THE PRESS.

We like this book very much, as it treats of the modern improved breeds of sheep. It treats of sheep as an industrial product; of the summer management of sheep; of the best soils; of the best pastures and grasses; the best way to feed roots; management of ewes and lambs; winter management; breeds and breeding sheep; wool, its structure and uses; diseases and remedies, etc. We would advise every breeder to get this manual.—*The Michigan Farmer*, Detroit.

Mr. Stewart is a veteran shepherd, and his knowledge has been gathered in the reliable, if sometimes tardy school of experience, and by this means alone he has learned successfully how to meet the needs of the modern improved breeds of sheep in American climate, and under American methods.—*The Weekly Blade*, Toledo, O.

It is a work of 252 pages, handsomely illustrated, showing the various breeds of sheep, and contains many other illustrations that will be of great service to the shepherd. —*Colman's Rural World*, St. Louis.

Henry Stewart has written, and Orange Judd Co. have published, the most thorough and practical treatise upon the management and breeding of sheep, that has yet been prepared for the shepherd. With the exception of Randall's Sheep Husbandry, which relates especially to Merinos and fine wool, the American shepherd has hitherto had no help except from English works, not only out of date, but incomplete, giving no account of the modern improved breeds, or of the diseases to which they are subject, and the occasional paper read before the Farmer's Club. He can congratulate himself now upon the possession of a manual superior in every respect, and thoroughly trustworthy.—*The World*, New York.

The book cannot fail to be of great value to all farmers who are breeding this kind of stock, and its sale will be large, especially in the West, where sheep growing is acquiring new importance.—*The Indiana Farmer*, Indianapolis.

We have seen no agricultural work for a long time which appears so well calculated to answer its purpose.—*The Dirigo Rural*, Bangor, Me.

A very practical treatise on a very important department of stock raising.—*The Congregationalist*, Boston.

It contains a condensed amount of practical information, of which every farmer who attends less or more to sheep raising should avail himself.—*The United Presbyterian*, Pittsburgh.

PRICE, POST-PAID, $1.50.

Play and Profit

IN MY GARDEN.

By E. P. ROE,

Author of "Barriers Burned Away," etc.

NOTICES BY THE PRESS.

The author takes us to his garden on the rocky hill-sides in the vicinity of West Point and shows us how out of it, after four years' experience, he evoked a profit of $1,000, and this while carrying on pastoral and literary labors. . . . . It is very rare that so much literary taste and skill are mated to so much agricultural experience and practical good sense. —*Harper's Magazine.*

This book is as poetical as it is practical. Still he is no dreamer. He goes into every essential detail with as much minuteness and precision as if he were writing a manual for the practical farmer. Indeed few works professedly devoted to agriculture give more sound and valuable information on the secret of winning golden harvests from the soil than this brief idyllic sketch.—*N. Y. Tribune.*

Price, Post-paid - - - - $1.50

Either of the above books sent post-paid on receipt of price by

ORANGE JUDD COMPANY,
245 BROADWAY, NEW YORK.

CENTENNIAL PRESENTS FOR THE LITTLE ONES.

INSTRUCTIVE. BEST GIFTS FOR AMUSING.

BEAUTIFUL. ALL SEASONS. INTERESTING.

Crandall's Building-Blocks

Can be made into forms of almost endless variety. The blocks are put up in neat, strong boxes, and a large sheet giving various designs of buildings, etc., accompanies each box.

Price—No. 1, $2.00; *by mail, prepaid,* **$2.50. No. 3, $1.00;** *by mail, prepaid,* **$1.25. No. 4, $1.00;** *by mail, prepaid,* **$1.15.**

Crandall's Masquerade-Blocks.

Making 300 different and beautiful Combinations of Pictures, which are in very brilliant colors. They are not injured by washing, do not wear out, and afford endless amusement.

Price $1.00; *by mail, prepaid,* **$1.20.**

Crandall's Acrobats.

Full of fun and frolic, and most brilliant in costume. These are among the most fascinating and ingenious toys ever invented. The number of figures which can be made with the pieces in a single box is limited only by the ingenuity of the operator.

Price $1.00; *by mail, prepaid,* **$1.25.**

Crandall's Expression-Blocks.

With Letters on one side, Picture on the other. The Alphabet is the key to the picture which, when complete, represents the inventor in Dream Land. These Blocks are water-proof, and can be washed if soiled.

Price 50 Cts.; *by mail, prepaid,* **70 Cts.**

Crandall's Illuminated Pictorial Alphabet Cubes.

These Cubes are gorgeously colored, and will make over 500 beautiful combinations or figures. They are water-proof, odorless, and durable; put up in handsome black walnut boxes; and are most attractive to both young and old—an elegant present for the little ones.

Price $2.50; *by mail, prepaid,* **$3.00.**

Crandall's Menagerie.

One of the most wonderful and amusing things ever brought out for the entertainment of children. The six animals composing the menagerie are beautifully painted, and so arranged into 56 pieces in each box, that tens of thousands of most laughter-provoking figures can be made up with them.

Price $2.00. [*Purchaser will pay express charges. Box too large to go safely by mail.*]

Crandall's Alphabet-Blocks, Red, White, and Blue.

Tasteless, odorless, and water-proof. The letters are on red, white, and blue ground. All children are pleased with them. **Price 75 Cts.;** *by mail, prepaid,* **$1.00.**

N.B.—*If postage is not remitted with the prices, as above, the blocks will be sent by express at purchaser's expense.*

Orders from the Trade will be supplied on Liberal Terms.

ORANGE JUDD COMPANY, 245 Broadway, New York.

"Hail Columbia!"

1776. 1876.

YOUNG AMERICA, ATTENTION!

If you want to have "lots of fun," go to the nearest toy-dealer and get

"Ye Hero of '76."

"As Natural as Life," and Twice as Amusing!

C. M. CRANDALL, who has done so much for children,—has made a splendid thing that is charming all the Little Folks who have seen it, viz.:

The Great Centennial Toy,

a fine **Old Soldier,** in Brilliantly Colored Uniform, with Cocked Hat, Flag, and Staff, all so ingeniously made and put together, that you can set him in a thousand different positions, and he stays there until you change him.—He is a thing of life; a real joy to all BOYS and GIRLS, (and older people too). He fits and also works well with all the **Acrobats** and the **Menagerie.**

Every Child Everywhere

should have **"Ye Hero of '76"** right away—or more than one... The real Hero is 9 inches high, and many times larger than the greatly reduced figure at the top of this column. The interesting and amusing positions which the Hero will take in your hands, are almost numberless.

Sold in a neat box, for only **35 cts.**—☞ Sent safely by mail, post-paid, for **45 cts.**—Send for one or more.

Sold by Toy Dealers generally, and by many others. Supplied Wholesale and Retail by the General Agents,

ORANGE JUDD COMPANY, 245 Broadway, N. Y.

CRANDALL'S "LITTLE ALL-RIGHT."

One of the funniest and jolliest of the low-priced toys. The lively Little All-right throws himself into a great variety of positions as he whirls around the "wheel." This toy can not conveniently be sent by mail. It is one of the latest things manufactured by C. M. Crandall. Ask the nearest Toy dealer for Crandall's Little All-right, hasten to buy it, and be happy.

GREAT DEDUCTION.
TEAS and COFFEES
At Wholesale Prices.

Increased Facilities to Club Organizers.

Send for New Price-List.

THE GREAT AMERICAN TEA COMPANY,

(P. O. Box 5643.) 31 and 33 Vesey St., New York.

SNYDER'S LITTLE GIANT STEAM ENGINE.

One-Horse Power, with tubular boiler complete, only... $150.
Two-Horse Power..... 200.
Three-Horse Power... 250.

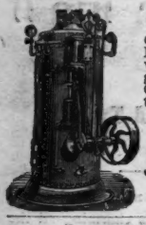
Call and Examine
OR SEND FOR
AN
ILLUSTRATED
CATALOGUE.

Skinner Portable Engine.

Also **Portable Boiler and Threshing Engines, Horizontal Return Flue Boiler.** Specially adapted for Farm and Dairy use. Cheapest first-class Engines in the market. Send for circular.

SKINNER & WOOD,
Erie, Pa.

WANTED Responsible Agents to sell our portable **FARM ENGINE,** made to drive Threshing Machines and other Farm Machinery, the best and most durable engine in the market. Address
SCHEIDLER & McNAMAR, Newark, Ohio.



BOOKWALTER ENGINE.

Compact, Substantial, Economical, and Easily managed. Guaranteed to work well and give full power claimed. Engine and Boiler complete, including Governor, Pump, &c., (and boxing), at the low price of

3 Horse-Power.....$252.00
4½ " " 303.50

☞ Put on Cars at Springfield, Ohio.

JAMES LEFFEL & CO.,
Springfield, Ohio,
or 109 Liberty St., New York City.

THE CLIPPER
Agricultural Engines on Wheels.

5 Horse Power, warranted to run a 50 Saw Cotton Gin, *Price* $150.—6 Horse Power, warranted to run any Separater up to 30-inch Cylinder, *Price* $435.—8 Horse Power, warranted to run any Separater built, *Price* $700.
Delivered on cars at Westminster, Md.
TAYLOR MFG. CO., Westminster, Maryland.

Sorghum Machinery, Mills and Evaporators,

at low prices, delivered at all principal Railroad Stations in the U. S.
Send stamp for circular.

SEMPLE, BIRGE & CO.,
St. Louis, Mo.

WHEELER'S
Insecticidors and Fertilizer Distributors
Patented July 20th, 1875.

These devices, attached to hose pipe of aqueduct, or force pump, and operated by water under pressure, and the Watering pot, constructed under the same patent, are the best ever yet devised for destroying insects, (potato bugs and currant worms not excepted), on plants under glass or in open air, or for fertilizing the same. **Fumigation Unnecessary. Warranted to do what is claimed for them.**

All these machines are on exhibit at Centennial Exposition, and can be seen in practical operation on the grounds.

Price of Hose Distributor $8.00. Watering-pot, average size, $6.00. Compounds of Tobacco, Sulphur, Guano, in 5 lb. boxes, 15 cts. per lb., of Paris Green and Hellebore, 30 cts. per lb. All goods C. O. D. Highest testimonials with descriptive circular sent on application.

W. F. WHEELER, 24th Ward, Boston, Mass.

POTATO BUGS,

Pear and Rose Slugs, and other leaf-eating insects, thoroughly and rapidly exterminated by using **PECK'S IMPROVED LIQUID ATOMIZER.** A complete apparatus for deodorizing and disinfecting hospitals, ships, stables, &c. Send for circular describing improved machine. WEST GROVE M'F'G CO.,
West Grove, Chester Co., Pa.

BUILDING FELT.

This water-proof material, resembling fine leather, is for outside work (*no tar substances used*) and inside, instead of plaster. Felt carpetings, etc. Send for circular and samples.

C. J. FAY, Camden, N. J.

COE'S APPLE GATHERER.
SEND FOR CIRCULAR.
IRA & IRO COE, QUINCY, ILL.
Pays

American Manures, or Farmer's and Planters Guide. Every Farmer and Planter should have a copy. Price $1.50. Address GEO. W. BRUCKNER, Monroe, Mich.

HO! FOR IOWA!!!

TO FARMERS, RENTERS, HIRED MEN, and all those wanting better lands in a climate unsurpassed and at cheaper prices than can be found elsewhere in the world. Send and obtain a descriptive pamphlet with maps and location of our 1,200,000 acres of R. R. land in Iowa, all adjacent to lines running direct to Chicago. Price only $5 and $6 per acre on R. R. time and terms. Half fare tickets from Chicago to the land and return. Cost allowed to purchasers. Call on or address **IOWA R. R. LAND CO.,** Offices 92 Randolph Street, Chicago, Ill., or Cedar Rapids, Iowa.

Wheat Farms for $3 per Acre,

on long credit, in the best wheat region in America. Land more than paid for by first crop. **5,000,000** acres for sale. For copy of the

KANSAS PACIFIC HOMESTEAD,

which gives full information, send address to
S. J. GILMORE, Land Commissioner,
Kas. Pac. R'way, Lawrence, Kas.

FARM-TENANTS WANTED IN CALIFORNIA.

We will lease, to farmers only, for any length of time, small Stock, Grain or Market Farms of Reclaimed Swamp Land—rent contingent upon crops. Finest possible soil, 15 to 30 ft. deep—climate admirable—280 to 300 working days in the year. Two crops annually. Markets convenient. Snow unknown. Value of material in improvements allowed at end of lease. Chance within three years to earn land capable of netting annually $20 to $30 per acre. Capital needed, about $500. Address
DAY & PALMER,
Webb's Landing P. O., California.
Reference—Rev. WM. CLIFT, Mystic Bridge, Conn.

FARMS FOR SALE in Delaware & Maryland. All descriptions and sizes, from $20 to $100 per acre. No finer farming country in the U. S., with all the advantages of markets, fruits, climate, and productiveness. Society good. Schools and Churches convenient. Send for circular to GEO. W. INGRAM, Real Estate Agent, Middletown, New Castle Co., Del.

PRAIRIE LANDS.

Send your address on **POSTAL CARD** to Land Com'r **B. & M. R. R., Burlington, Iowa,** and receive **Free,** Copy of Iowa & Neb. Farmer, with **CHART of LANDS.**

VALUABLE MARYLAND and DELAWARE FARMS for sale by
D. J. BLACKISTON, **Chestertown, Md.**

All about Maryland and Delaware. **FARM** Catalogues and maps free. J. F. MANCHA, Easton, Md., Smyrna, Del.

DON'T GO WEST. Maryland Farms, Salt Water, Luxuries & Fruit. Free catalogue. **Now is the time.** Dorchester Co., Eastern Maryland, J. C. PLUMMER, Cambridge, Md. **Is the place.**

WESTERN FARMS.

Parties desiring to purchase Farms in any of the Western States, either improved or unimproved, are requested to write to

Mason, Mills & Co.,
REAL ESTATE DEALERS AND BROKERS,
145 South Clark Street, CHICAGO, ILLS.,
for descriptive catalogue and price lists, which will be mailed free upon application.

RICE'S SPRING BRACE.

Pat'd Feb. 11, '68 and Jan. 4, '76. $3 to $5 each, delivered. So saves all parts of the vehicle that it will do twice the service, and ride easier. Agents wanted. Address
SPRING BRACE MANUFACTORY.
CHAS. L. RICE, Proprietor,
Lock Box 384, Scranton, Pa.

GUNS, REVOLVERS, PISTOLS.

Prices lower than ever.

Send for Illustrated Catalogue. Address
GREAT WESTERN GUN WORKS, Pittsburgh, Pa.

NEW PIANO.

An elegant **New, Square Grand Arion Piano.** 7⅓ Octaves, Rosewood, Four Round Corners, Extra Carved Legs, Arion Scroll Desk and Carved Lyre. The List Price of this elegant instrument is $850, but it will be sold at a **very large discount for cash.**
Address GEO. T. TIMPSON, 26 Broad St., New York.

ADVERTISING RATES.

American Agriculturist.

ENGLISH EDITION.

Ordinary Pages, **$1.50** *per line* (agate), each insertion.
Last Page, and Third Cover Page, **$2** *per line.*
Second Cover Page—**$2.50** per line.
Page next to Reading and Last Cover Page—**$3.00** per line.
No advertisement taken for less than $4.50 each insertion.

GERMAN EDITION.

Inside Pages, 15 cents per line, each insertion.
Business Notices and Last Page, 25 cents per line.
No advertisement taken for less than $1.00 each insertion.

☞ No Advertisement of Medicines or Humbugs received.
Address all orders to
ORANGE JUDD COMPANY,
245 BROADWAY, NEW YORK.

THE PRACTICAL
POULTRY KEEPER.

A COMPLETE AND STANDARD GUIDE TO THE

MANAGEMENT OF POULTRY,

FOR DOMESTIC USE, THE MARKETS, OR EXHIBITION.

Beautifully Illustrated.

BY L. WRIGHT.

NOTICES BY THE PRESS.

This book is a valuable manual for everybody who feeds chickens or sells eggs. It suits at once the plain poulterer who must make the business pay, and the chicken fancier whose taste is for gay plumage, and strange, bright birds. The most valuable portion is the first section, extending through fifty-five pages. These were written with the intention of producing a manual so plain, minute, and practical, that any one could, by using it as a guide, with no previous experience with poultry, become at once successful in producing eggs, young chickens, and fat fowls for market. The author has not missed his aim. The middle parts of Mr. Wright's Manual are taken up with minute directions for making show fowls for Fairs, a nice discussion of the good and bad points of the different breeds, and a brief sketch of such fancy stock as peafowl, pheasants, and water-fowl. Then follows a section on artificial hatching, and another, worth special attention, on large poultry yards....A study of Mr. Wright's book will convince any farmer's wife that all she needs is to give a half hour each day, of intelligent and sagacious attention to her poultry, in order to obtain from them, not tape, and knitting needles, and buttons, and nutmegs merely, but the family supplies of sugar, shoes, and cloth. *New York Tribune.*

It is the most complete and valuable work on the matters of which it treats yet published. It will be found a plain and sufficient guide to any one in any circumstances likely to occur, and is illustrated with elegant engravings of many breeds of fowls. *Farmers' Cabinet.*

This is a reprint, with numerous wood engravings, of an English book, the object of which is to convey in plain language a great deal of practical information about the breeding and management of poultry, whether for domestic use, the markets, or exhibition....The book is eminently practical, and we recommend it to farmers and others interested in breeding and selling poultry.
Philadelphia Press.

It is a handsome volume, brought out in the best style, and enriched with nearly fifty illustrations. It is evidently the fruit of a thorough, practical experience and knowledge of fowls, and will be found a plain and sufficient guide in all the practical details of poultry management as a profitable business. *United Presbyterian.*

The subject is treated fully and ably by an experienced hand, and the volume will doubtless find a large sale among the growing class of poultry fanciers. It is embellished with numerous illustrative engravings.
New York Observer.

The author has called to his aid all who were experienced in the subject whereof he writes, and the consequence is a volume of more than ordinary thoroughness and exhaustiveness. *Rochester Democrat.*

The book is a complete and standard guide to the management of poultry for domestic use, the market, and for exhibition. *Watchman and Reflector.*

PRICE, POST-PAID, $2.00.

ORANGE JUDD CO.,
245 Broadway, New York.